



20<sup>th</sup> International Conference  
on the Science and Application of  
Nanotubes and Low-Dimensional  
Materials

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**21-26 July 2019**

**Würzburg | Germany**

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## Conference Organization (Local)

**Tobias Hertel** (Julius-Maximilians-U Würzburg, Germany)

**Andreas Hirsch** (FAU Erlangen-Nürnberg, Germany)

**Ralph Krupke** (KIT und TU Darmstadt, Germany)

**Jana Zaumseil** (Universität Heidelberg, Germany)

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**Yan Li** (Peking University, China)

**Masako Yudasaka** (AIST, Japan)

**Ming Zheng** (NIST, USA)

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## Symposium Organisation

Co-Chairs       **Tobias Hertel** (Julius-Maximilians-U Würzburg, Germany)  
                     **Masako Yudasaka** (AIST, Japan)

### 1<sup>st</sup> Symposium on Synthesis, Purification and Functionalization of Low-Dimensional Materials (SPFLD19 - 'Synthesis')

Chair               **Yan Li** (Peking U, China)  
Local Organizer   **Ben Flavel** (KIT, Germany)  
Organizers       **Sofie Cambre** (U Antwerp, Belgium)  
                      **Shigeo Maruyama** (U Tokyo, Japan)  
                      **Avetik Harutyunyan** (Honda Research Institute, USA)

### 2<sup>nd</sup> Symposium on Nanocarbon Materials for Energy and Sustainability (NMES19 - 'Energy')

Co-Chairs       **Qiang Zhang** (Peking U, China)  
                      **Feng Li** (Shenyang National Laboratory for Materials Science, China)  
Local Organizer   **Maria Antonietta Loi** (U Groningen, Netherlands)  
Organizer        **Suguru Noda** (WASEDA U, Japan)

### 7<sup>th</sup> Carbon Nanotube Thin Film Electronics and Applications Symposium (CNTFA19 - 'Electronics')

Co-Chairs       **Esko I. Kauppinen** (Aalto U, Finland)  
                      **Yutaka Ohno** (Nagoya U, Japan)  
Local Organizer   **Christoph Strunk** (U Regensburg, Germany)

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**10<sup>th</sup> Symposium on Carbon Nanomaterials Biology, Medicine & Toxicology (CNBMT19 - 'NanoBio')**

Co-Chairs        **Masako Yudasaka** (AIST, Japan)  
                      **Alberto Bianco** (CNRS, France)

Local Organizer   **Ardemis Boghossian** (EPF Lausanne, Switzerland)

Organizers        **Emmanuel Flahaut** (CNRS, France)  
                      **Dan Heller** (Sloan Kettering Center, USA)  
                      **Kostas Kostarelos** (U Manchester, UK)

**10<sup>th</sup> Graphene and 2D Materials Symposium (GSS19 - '2D Materials')**

Chair                **Annick Loiseau** (ONERA, France)

Local Organizer   **Alexander Hoegele** (LMU Munich, Germany)

**13<sup>th</sup> Symposium on Nanotube Spectroscopy, Photonics, and Applications in Metrology (NSAP19 - 'Spectroscopy')**

Co-Chairs        **Ado Jorio** (U Minas Gerais, Brasil)  
                      **Achim Hartschuh** (LMU Munich, Germany)

Organizers        **Hiromichi Kataura** (AIST, Japan)  
                      **Yuhei Miyauchi** (U Kyoto, Japan)  
                      **Stephanie Reich** (Free U Berlin, Germany)  
                      **Jin Zhang** (Peking U, China)  
                      **Ming Zheng** (NIST, USA)

**14<sup>th</sup> Symposium on Computational Challenges in Two-Dimensional Materials and Nanotubes (CCTN19 - 'theory')**

Chair                **Yoshiyuki Miyamoto** (AIST, Japan)

Local Organizer   **Ermin Malic** (Chalmers UT, Sweden)

Organizers        **Christophe Bichara** (CNRS and Aix-Marseille U, France)  
                      **Zhuhua Zhang** (Nanjing University of Aeronautics and Astronautics, China)

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## Local Organizing Team

**Florian Oberndorfer** (IT & webpage management)

**Friedrich Schöppler** (sponsor liaison)

**Sabine Walther** (conference secretary)

## Students & Staff

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**Markus Voelckel**

**Ivonne Vollert**

**Martina Wederhake**

## Special Thanks to

**Kirstin Hertel-Dietrich** (Comacs GmbH)

**Mandy Wagner** (Conventus GmbH)

**Masako Yudasaka** (AIST)

**Julius-Maximilians-University Würzburg**



## Thanks to our Sponsors

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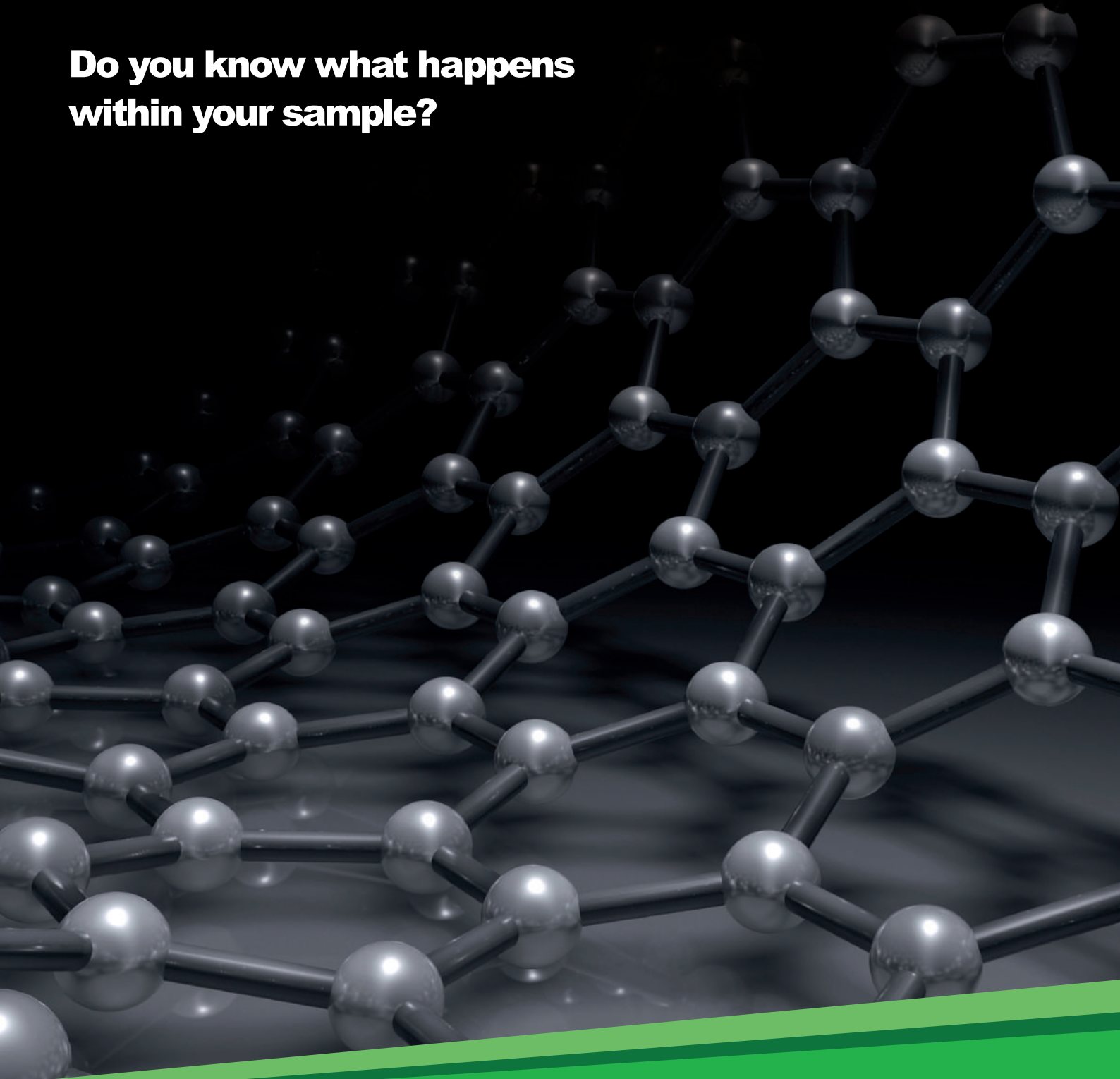
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## Welcome to NT19

Dear Colleague.

We are excited about months of preparations finally coming to fruition with the opening of NT19 in Würzburg. We hope you will find the meeting enjoyable, interesting and enriching. With 142 oral and 280 poster presentations there is plenty to learn and to choose from.

Seasoned attendees of former NT conferences will notice important changes to the program layout. Most notably, we have integrated the previous Satellite Symposia into the main conference in the form of parallel afternoon sessions on Monday, Tuesday and Thursday. While this made the organization more complex we also believe that it will provide you with the opportunity to better tailor this years NT experience to your specific interests.

This conference also represents a milestone in NT history. 2019 marks the 20<sup>th</sup> anniversary of the first NT workshop, organized in 1999 by David Tománek in East Lansing, Michigan. Thanks to the efforts of David and the organizers that followed, the conference has catalyzed the formation of a strong community and has helped test ideas as well as shape future research directions.

In these 20 years, the meeting has also experienced considerable growth while trying to maintain its original spontaneity and youthfulness, a difficult balance to strike in an evolving and maturing research field. With the organization of this years meeting we aimed at providing opportunities for informal exchange in a hopefully stimulating environment. Poster sessions continue to play a central role for the NT conference as a whole, now merging presentations from the main event with those from the seven symposia.

As such, the NT conference series remains an ongoing social and organizational experiment, as exciting for organizers and attendees as the research being performed in our offices and laboratories.

With all the best for a productive and stimulating meeting.

Yours sincerely



Tobias Hertel  
(local organizer and conference  
chair, JMU Würzburg)



Jana Zaumseil  
(co-chair, Universität Heidelberg)



Andreas Hirsch  
(co-chair, FAU Erlangen-Nürnberg)



Ralph Krupke  
(co-chair, KIT & TU Darmstadt)

- 1 Falkenhaus
- 2 Marienkapelle
- 3 Höfe und Bürgerhäuser
- 4 Rückermainhof
- 5 Alter Kranen
- 6 Alte Mainbrücke
- 7 Grafeneckart und Rathaus / Town Hall
- 8 Neumünster
- 9 Dom St. Kilian
- 10 Cathedral of St. Kilian
- 11 Domschatz / Cathedral Treasury
- 12 Museum am Dom
- 13 Riemenschneiderhaus
- 14 Franziskanerkirche
- 15 Hof zum Rebstock
- 16 Alte Universität
- 17 UNESCO-Weltkulturerbe Residenz
- 18 UNESCO-World Heritage Residence
- 19 Roter Bau
- 20 Burgerspital zum Hl. Geist
- 21 Stift Haug
- 22 Juliuspsital
- 23 Augustinerkirche
- 24 Hof Conti
- 25 St. Gertraud
- 26 Röntgen-Gedächtnissstätte
- 27 Röntgen-Memorial
- 28 Kunstschiff „Arte Noah“
- 29 Kulturspeicher
- 30 Don Bosco Kirche
- 31 Deutschauskirche
- 32 Hofspitalkirche „Spitale“
- 33 Festung Marienberg
- 34 Fortess Marienberg
- 35 St. Burkard
- 36 Ehemaliges Frauenzuchtthaus
- 37 Former Women's Prison
- 38 Kärpfele
- 39 Karmelitenkirche
- 40 St. Peter
- 41 St. Stephan
- 42 St. Johannes
- 43 Sieboldmuseum
- 44 Frankfurter Straße 87
- 45 jüdisches Museum / Jewish Museum
- 46 Shalom Europa
- 47 Valentin-Becker-Str. 11
- 48 Botanischer Garten
- 49 Botanischer Garten
- 50 Julius-von-Sachs-Platz 4
- 51 Mineralogisches Museum
- 52 Mineralogisches Museum Am Hubland

Weitere Informationen zu den Sehenswürdigkeiten/  
Further information about the sights:  
[www.wuerzburg.de](http://www.wuerzburg.de)

## Tourist Information

Falkenhaus am Markt  
Tel. +49(0)931/37 23 98  
[www.wuerzburg.de](http://www.wuerzburg.de)  
Hotelzimmervermittlung, Altstadt-führungen, Veranstaltungstickets, Würzburg-Reiseführer, Souvenirs  
Hotel reservations, guided tours, event tickets, Würzburg guide-books, souvenirs  
Jan – März Mo – Fr 10 – 17 Uhr  
Sa 10 – 14 Uhr  
April, Nov, Dez Mo – Fr 10 – 18 Uhr  
Mai – Okt Mo – Fr 10 – 18 Uhr  
Sa 10 – 15 Uhr  
So und Feiertage 10 – 14 Uhr

## Würzburg-App

Entdecken Sie Würzburg mit der kostenlosen App für Smartphones und Tablets.  
Explore Würzburg with the free Würzburg-App for smartphones and tablets.  
[www.wuerzburg.de/wuerzburg-app](http://www.wuerzburg.de/wuerzburg-app)



## City

### Traveling to Würzburg

If you arrive by plane in Frankfurt you can take one of over 20 daily direct ICE trains toward Würzburg HBF (main station). The travel time from Frankfurt airport (FRA) to Würzburg HBF is about 1:30h. The trip from Munich (MUC) to Würzburg requires at least one change and takes 3:00h or more. Seat reservations on ICE trains are not mandatory but highly recommended. For connections and online booking visit [bahn.com/en/](https://bahn.com/en/). The *DB navigator* app can be used for booking as well as for travel information and is available for [android](#) and [iOS](#) devices. Just as importantly, this app provides real-time updates on recommended travel routes and all too frequent delays.

### Getting Around Town

The preferred mode of transportation is walking. Würzburg is a small town. Most points of interest east of the Main river can be reached from the centrally located Old Main Bridge in no more than 15 minutes, on foot! We have highlighted the congress center, train station, old Main bridge and three important wineries on the map to the left (map [website](#), download [pdf](#)).

### Cabs, Tram, Bus

Unfortunately, ride-sharing is currently not available in Würzburg. If you are prepared to pay with cash you can hail a white cab 'old school' style from the curb or from the dispatcher by phone +49 (0)931 19410. You'll also find queues of cabs waiting for customers at some points of interest.

Connections for all modes of local public transport can be found through the versatile *DB navigator* app ([android](#), [iOS](#)).

Bus and tram rides within the inner city are 1.40 € per trip, one-day tickets are 5.20 €. Rides to the city outskirts are 2.80 € per trip. Tickets may be purchased from vending machines at some of the major bus/tram intersections or directly from bus drivers. Bus drivers only take cash while vending machines may also accept credit cards. You need to validate a ticket at the start of each trip using one of the ticket validation boxes found as you enter buses or trams. When you enter a connecting bus on your trip, show your validated ticket to the driver (even if he appears disinterested).

### Tourism and Sightseeing

A good place to start is the Würzburg [webpage](#) with plenty of useful information on events and seasonal highlights as well as major tourist attractions.

### City Walk for Accompanying Persons

We offer a Monday morning city excursion for accompanying persons. Get a first look at the beautiful City of Würzburg. Discover what and where to see, eat and shop! See the city from above, experience the "Brückenschoppen" and enjoy lunch in a Biergarten! We meet on Monday morning, 10:00 o'clock, at the foot of the central market square's obelisk next to the Marienkapelle. Check out the NT19 facebook page under 'events' for additional information and upcoming details.

## Conference

### Registration

The registration desk can be found in the lobby area of the congress center on your way from the main entrance (A) to the Franconia Lecture Hall (see blue squares on the floor plans to the right). The registration desk opens at 13:00 on Sunday and at 7:30 on all other days.

### WLAN Access

Network name: CCW5 | User name: NT19guest | Password: nanomaterials .

### Oral Presentations - BYOD

Please bring your own device including connectors needed to hook up to HDMI or VGA connections. All projectors are capable of wide-screen format display. Feel free to ask our students to help you try these out during coffee or lunch breaks ahead of your presentation to identify and correct possible connectivity issues.

### Poster Sessions

**Coffee & buffet.** The 17:00-18:30 poster sessions are preceded by a coffee break. The second 19:00-21:00 poster sessions are accompanied by a complementary dinner-buffet and drinks.

**Printed poster pickup.** In the congress center lobby next to the main entrance Sunday 13:00-18:30, Monday 08:00-16:30 or Tuesday 08:00-16:30.

**Poster setup.** Following the morning session coffee break. Posters should be taken down before the end of the next days morning session coffee break. For attaching posters to poster boards, use the glue strips provided as part of your registration package.

**Odd**-numbered posters: 17:00 - 18:30.

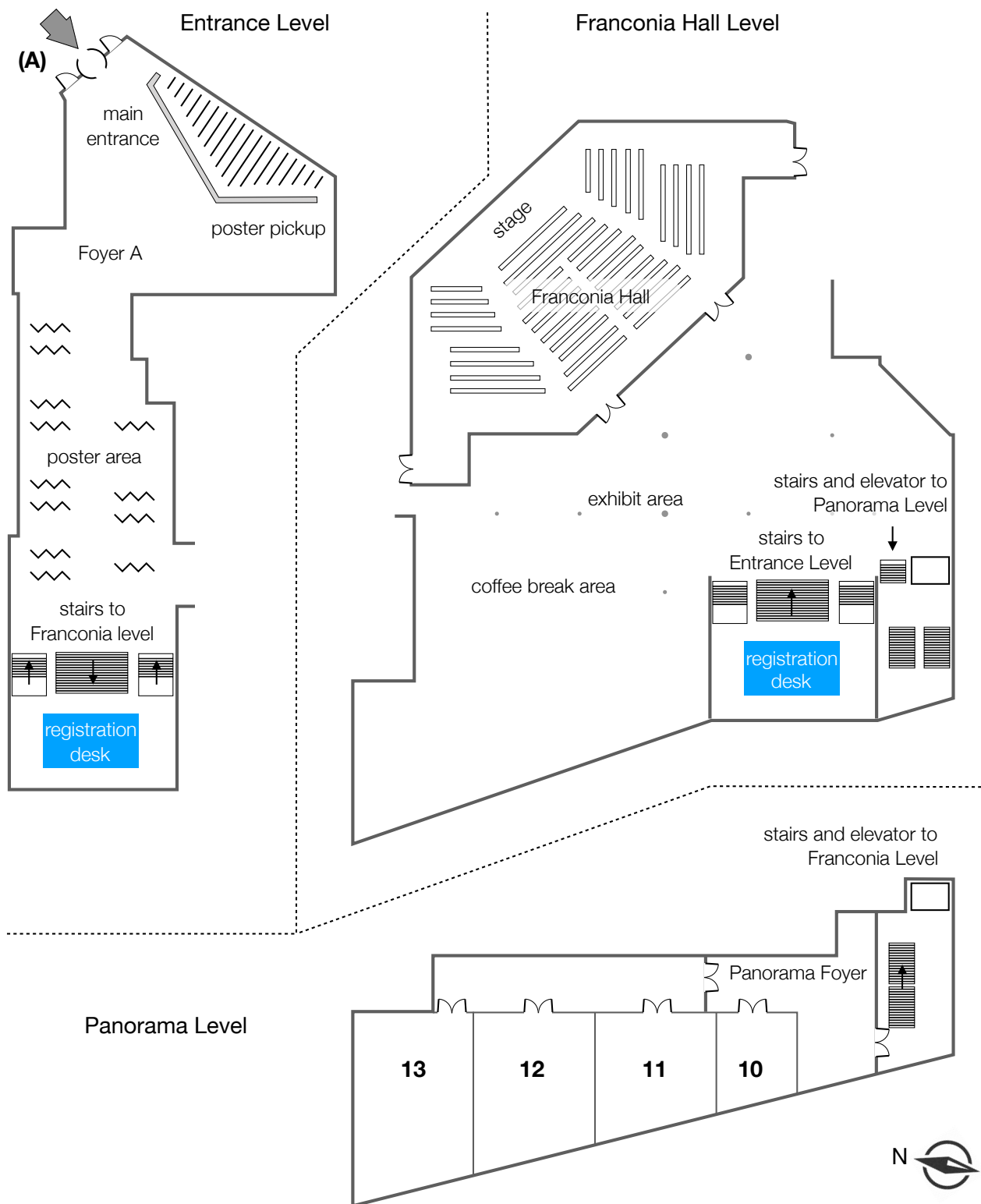
**Even**-numbered posters: 19:00 - 21:00.

**Poster awards.** Book vouchers are sponsored by the Royal Society of Chemistry and the Bavarian Nanoinitiative. Winners will be announced during the closing ceremony.

### Lunch Options

The Maritim hotel neighboring the Congress Center offers a daily lunch buffet only a few steps from the Franconia Lecture Hall. There are also less pricy alternatives within no more than 10 minute walking distance in the nearby downtown area.

## Venue - Schematic Floor Plan





## Wednesday City Tours at 15:45 and Wine Tasting at 18:30

Registered participants and accompanying persons meet their tour guides on Wednesday at 15:45 at the Congress Center main entrance (A). Numbers on the tour-and-wine-tasting-tickets provided with your registration package indicate the guided tour to be joined, the colors indicate your designated winery. For the wine tastings please join us at 18:30 at one of the three meeting points indicated on the map below. Alternatively you may also follow one of our students who will pick you up at the Franconia Fountain at 18:15 (see map below). Feel free to swap your ticket(s) with a colleague if you want to join another group for the wine tasting event.



### Meeting points

#### Juliusspital (magenta tickets)

At the fountain in the center of its back-yard. The entrance to the yard is on *Juliuspromenade* about 100 m from the intersection with *Koellikerstraße*.

#### Bürgerspital (yellow tickets)

At the Vinothek 'Weinhaus' at the corner of *Theaterstraße* and *Semmelstraße*.

#### Hofkeller (blue tickets)

At the Franconia-Fountain in front of the three-sided ceremonial court-yard of the *Würzburg Residence*.





# Program at a Glance

## Conference Schedule at a Glance

|             | <b>Su</b>                     | <b>Mo</b>       | <b>Tu</b>       | <b>We</b>                | <b>Th</b>       | <b>Fr</b>      |
|-------------|-------------------------------|-----------------|-----------------|--------------------------|-----------------|----------------|
| <b>Date</b> | 21. July                      | 22. July        | 23. July        | 24. July                 | 25. July        | 26. July       |
|             |                               | <b>Plenary</b>  | <b>Plenary</b>  | <b>Plenary</b>           | <b>Plenary</b>  | <b>Plenary</b> |
| 08:30-12:15 |                               | PIS 1 & 2       | PIS 3 & 4       | PIS 5 & 6                | PIS 7 & 8       | PIS 9 & 10     |
|             |                               | lunch break     | lunch break     | lunch break              | lunch break     | closing 12:15  |
|             | <b>Tutorials</b>              | <b>Symposia</b> | <b>Symposia</b> | <b>Symposia</b>          | <b>Symposia</b> |                |
| 14:00-16:30 | T1 & T2                       | SEI, S2D, SEn,  | SEI, S2D, SEn,  | SEI, ...SEn, SSp, SNB    | SEI, S2D, SEn,  |                |
|             |                               | SSy, STh        | SSp, SNB        |                          | SSp, SNB        |                |
|             | coffee break                  | coffee break    | coffee break    | guided tours 15:45-18:00 | coffee break    |                |
|             | <b>Tutorial</b>               | <b>Poster</b>   | <b>Poster</b>   |                          | <b>Poster</b>   |                |
| 17:00-18:30 | T3 to 18:15                   | P1 (odd #s)     | P3 (odd #s)     |                          | P5 (odd #s)     |                |
|             | welcome reception 18:30-20:30 | break           | break           |                          | break           |                |
| 19:00-21:00 |                               | P2 (even #s)    | P4 (even #s)    | wine tasting 18:30-22:30 | P6 (even #s)    |                |

## Plenary Schedule at a Glance (Franconia Hall)

|               | Mo                            | Tu                     | We                    | Th                       | Fr                                     |
|---------------|-------------------------------|------------------------|-----------------------|--------------------------|----------------------------------------|
| Date          | 22. July                      | 23. July               | 24. July              | 25. July                 | 26. July                               |
| Session       | PI1                           | PI3                    | PI5                   | PI7                      | PI9                                    |
| 08:30 - 09:15 | Welcome<br>- K1 -<br>J. Zhang | - K2 -<br>J. Maultzsch | - K3 -<br>T.F. Heinz  | - K4 -<br>H.S.P. Wong    | - K5 -<br>C. Voisin                    |
| 09:15 - 09:40 | - I1 -<br>Y. Li               | - I5 -<br>C. Cocchi    | - I10 -<br>Y.H. Lee   | - I12 -<br>M. Pasquali   | - I15 -<br>S. Noda                     |
| 09:40 - 10:05 | - I2 -<br>H. Kataura          | - I6 -<br>S. Chiashi   | - C4 -<br>S. Maruyama | - I13 -<br>Y.H. Wang     | - C11 -<br>D. Heller                   |
|               | coffee<br>break               | coffee<br>break        | coffee<br>break       | coffee<br>break          | coffee<br>break                        |
| Session       | PI2                           | PI4                    | PI6                   | PI8                      | PI10                                   |
| 10:35 - 11:00 | - C1 -<br>A. Loiseau          | - I7 -<br>M. Shaffer   | - I11 -<br>R. Martel  | - C8 -<br>Y. Nonoguchi   | - C12 -<br>Y. Miyamoto                 |
| 11:00 - 11:25 | - I3 -<br>M. Zheng            | - I8 -<br>M. Strano    | - C5 -<br>M. Engel    | - C9 -<br>W. Qian        | - I16 -<br>Y. Ohno                     |
| 11:25 - 11:50 | - C2 -<br>H. Li               | - C3 -<br>L. Shi       | - C6 -<br>K. Mustonen | - C10 -<br>M. Scagliotti | - C13 -<br>C. Meyer                    |
| 11:50 - 12:15 | - I4 -<br>B. Yakobson         | - I9 -<br>Q. Li        | - C7 -<br>A. Jorio    | - I14 -<br>M. Xu         | poster awards<br>& closing<br>ceremony |

## Symposia Schedule at a Glance

|                  | <b>Electronics<br/>(CNTFA19)</b> | <b>Energy<br/>(NMES19)</b> | <b>2D Materials<br/>(GSS19)</b> |
|------------------|----------------------------------|----------------------------|---------------------------------|
| <b>Monday</b>    | Panorama level 11                | Franconia Hall             | Panorama level 13               |
| 14:00 - 14:20    | SEI1 - L. Peng                   | SEn1 - K. Hata             | S2D1 - X. Marie                 |
| 14:20 - 14:40    |                                  |                            |                                 |
| 14:40 - 15:00    | SEI2 - J. Zhao                   | SEn2 - J. Blackburn        | S2D2 - S. Borghardt             |
| 15:00 - 15:20    | SEI3 - Th. Gao                   | SEn3 - Y. Chen             | S2D3 - C. Kastl                 |
|                  | 10 min break                     | 10 min break               | 10 min break                    |
| 15:30 - 15:50    | SEI4 - K. Mustonen               | SEn4 - C.-M. Chen          | S2D4 - C. Schneider             |
| 15:50 - 16:10    | SEI5 - N.F. Hartmann             | SEn5 - E. Gracia-Espino    | S2D5 - N.A. Peyyety             |
| 16:10 - 16:30    | SEI6 - A. Sekiguchi              | SEn6 - H. Ji               | S2D6 - M. Kroner                |
| <b>Tuesday</b>   |                                  |                            |                                 |
| 14:00 - 14:20    | SEI7 - E Laird                   | SEn7 - F. Wei              | S2D7 - Y.K. Yap                 |
| 14:20 - 14:40    |                                  |                            | S2D8 - C. Journet               |
| 14:40 - 15:00    | SEI8 - P. Hakonen                | SEn8 - C. Brabec           | S2D9 - J. Pang                  |
| 15:00 - 15:20    | SEI9 - A. Hüttel                 | SEn9 - E. Kaupinnen        | S2D10 - Y. Wu                   |
|                  | 10 min break                     | 10 min break               | 10 min break                    |
| 15:30 - 15:50    | SEI10 - Y. Yaish                 | SEn10 - S.O. Kim           | S2D11 - U. Khan                 |
| 15:50 - 16:10    | SEI11 - L. Cong                  | SEn11 - C. Liu             | S2D12 - M. Heuken               |
| 16:10 - 16:30    | SEI12 - A. Descombin             | SEn12 - W. Lyu             | S2D13 - H. Lee                  |
| <b>Wednesday</b> |                                  |                            |                                 |
| 14:00 - 14:20    | SEI13 - M. Hersam                | SEn13 - R. Nicholas        | S2D14 - B. Dlubak               |
| 14:20 - 14:40    | SEI14 - Y. Hu                    | SEn14 - V. Koman           | S2D15 - L. Kühl Teles           |
| 14:40 - 15:00    | SEI15 - L. Liu                   | SEn15 - B. Wei             | S2D16 - I. Kriegel              |
| 15:00 - 15:20    | SEI16 - E.X. Ding                | SEn16 - I. Jeon            | S2D17 - P. Zeller               |
| <b>Thursday</b>  |                                  |                            |                                 |
| 14:00 - 14:20    | SEI17 - A.G. Nasibulin           | SEn17 - Y. Zhu             | S2D18 - Banszerus               |
| 14:20 - 14:40    | SEI18 - Z. Ma                    | SEn18 - J. Vilatela        |                                 |
| 14:40 - 15:00    | SEI19 - T. Szkopek               |                            | S2D19 - I. Bondarev             |
| 15:00 - 15:20    | SEI20 - D. Lioubtchenko          |                            | S2D20 - S. Caneva               |
|                  | 10 min break                     | 10 min break               | 10 min break                    |
| 15:30 - 15:50    | SEI21 - V. Koman                 |                            | S2D21 - A. Sperlich             |
| 15:50 - 16:10    | SEI22 - A. Tsapenko              |                            | S2D22 - Y. Wei                  |
| 16:10 - 16:30    |                                  |                            | S2D23 - B. Plaçais              |

## Symposia Schedule at a Glance

|                  | <b>Synthesis<br/>(SPFLD19)</b> | <b>Spectroscopy<br/>(NSAP19)</b> | <b>Theory<br/>(CCTN19)</b> | <b>NanoBio<br/>(CNBMT19)</b> |
|------------------|--------------------------------|----------------------------------|----------------------------|------------------------------|
| <b>Monday</b>    | Panorama level 12              |                                  | Panorama level 10          |                              |
| 14:00 - 14:20    | SSy1 - Harutyunyan             |                                  | STh1 - R. Saito            |                              |
| 14:20 - 14:40    | SSy2 - D. Futaba               |                                  |                            |                              |
| 14:40 - 15:00    | SSy3 - K. Jiang                |                                  | STh2 - M. Selig            |                              |
| 15:00 - 15:20    | SSy4 - F. Yang                 |                                  | STh3 - H. Yu               |                              |
|                  | 10 min break                   |                                  | 10 min break               |                              |
| 15:30 - 15:50    | SSy5 - V. Jourdain             |                                  | STh4 - H- Santos           |                              |
| 15:50 - 16:10    | SSy6 - R. Xiang                |                                  | STh5 - D. Prezzi           |                              |
| 16:10 - 16:30    | SSy7 - L. Shi                  |                                  | STh6 - C. Vets             |                              |
| <b>Tuesday</b>   |                                |                                  |                            |                              |
| 14:00 - 14:20    | SSy8 - Wenseleers              |                                  | STh7 - A. Page             |                              |
| 14:20 - 14:40    | SSy9 - J. Fagan                |                                  | STh8 - Z. Wang             |                              |
| 14:40 - 15:00    | SSy10 - M. Arnold              |                                  | STh9 - J. Elliot           |                              |
| 15:00 - 15:20    | SSy11 - E. Gauffrès            |                                  | STh10 - B. Flebus          |                              |
|                  | 10 min break                   |                                  | 10 min break               |                              |
| 15:30 - 15:50    | SEI12 - R. Nißler              |                                  | STh11 - K.V. Bets          |                              |
| 15:50 - 16:10    |                                | SSp1 - S. Doorn                  |                            | SNB1 - M.S.Strano            |
| 16:10 - 16:30    |                                |                                  |                            |                              |
| <b>Wednesday</b> |                                |                                  |                            |                              |
| 14:00 - 14:20    |                                | SSp2 - A. Loiseau                |                            | SNB2 - C. Allard             |
| 14:20 - 14:40    |                                | SSp3 - A. Riaz                   |                            | SNB3 - S. Kruss              |
| 14:40 - 15:00    |                                | SSp4 - G. Gordeev                |                            | SNB4 - Y. Wang               |
| 15:00 - 15:20    |                                | SSp5 - L. Malard                 |                            | SNB5 - Antonucci             |
| <b>Thursday</b>  |                                |                                  |                            |                              |
| 14:00 - 14:20    |                                | SSp6 - K. Liu                    |                            | SNB6 - E. Hirata             |
| 14:20 - 14:40    |                                |                                  |                            | SNB7 - S. Florito            |
| 14:40 - 15:00    |                                | SSp7 - S. Cambré                 |                            | SNB8 - M. Zhang              |
| 15:00 - 15:20    |                                | SSp8 - Y. Homma                  |                            | SNB9 - D. Heller             |
|                  |                                | 10 min break                     |                            | 10 min break                 |
| 15:30 - 15:50    |                                | SSp9 - Y. K. Kato                |                            | SNB10 - M. Zheng             |
| 15:50 - 16:10    |                                | SSp10 - Joselevich               |                            | SNB11 - S. Freddi            |
| 16:10 - 16:30    |                                | SSp11 - A. Ishii                 |                            | SNB12 - G. Bisker            |



# Sunday Program

# Characterizing advanced **MATERIALS?**

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Birck Nanotechnology Center, Purdue University



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## Tutorial program

Franconia Hall

13:00 - 18:30

Registration &amp; poster pickup

CCW Lobby

## Session T1

Chair: Ralph Krupke

14:00 - 15:15

T1

**Tutorial Lecture****Sofie Cambré** (University of Antwerp)*Optical Spectroscopy To Characterize the Filling and Sorting of Carbon Nanotubes*

15:15 - 16:30

T2

**Tutorial Lecture****Shahal Ilani** (Weizmann Institute of Science)*Quantum Design in Carbon Nanotubes*

Coffee break

CCW Lobby

## Session T2

Chair: Tobias Hertel

17:00 - 18:15

T3

**Distinguished Tutorial Lecture****Sumio Iijima** (Meijo University & NEC)*Aligning CNTs for Electronic Device Applications*

18:30 - 20:30

Welcome reception

Panorama level

Sunday  
21 July 2019

# Program Monday

Monday  
22 July 2019

speed

sensitivity

resolution

2  $\mu\text{m}$

Correlative Raman-SEM (RISE) image of graphene.

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## Plenary program

Franconia Hall

## Session Pl1

Chair: Annick Loiseau

08:30 - 08:35

**Tobias Hertel** (Julius-Maximilians-U Würzburg)  
*Welcome Address*

08:35 - 09:15

K1 **Jin Zhang** (Peking University)  
*Chirality Controlled Growth of Horizontal Carbon Nanotubes Array With Designed Catalysts*

09:15 - 09:40

I1 **Yan Li** (Peking University)  
*In Situ Study of Single-Walled Carbon Nanotube Growth With Cobalt and Tungsten-Cobalt Intermetallic Compound Catalysts*

09:40 - 10:05

I2 **Hiromichi Kataura** (AIST)  
*Multiscale Hydrophobic Interaction Between Carbon Nanotubes, Surfactants, and Polysaccharide Gels*

Coffee break

CCW Lobby

## Session Pl2

Chair: Riichiro Saito

10:35 - 11:00

C1 **Annick Loiseau** (LEM, CNRS-ONERA)  
*Momentum-Resolved Dielectric Response of Free Standing Black Phosphorus Down to the Monolayer*

11:00 - 11:25

I3 **Ming Zheng** (National Institute of Standards and Technology)  
*Resolving Carbon Nanotube Structures by DNA*

11:25 - 11:50

C2 **Han Li** (KIT)  
*Separation of Single Walled Carbon Nanotubes in One to Three Steps Using pH Modulated Aqueous Two-Phase Extraction*

11:50 - 12:15

I4 **Boris Yakobson** (Rice University)  
*Computations To Explain or Predict, in Low-Dimensional Materials*

Lunch break

Monday  
 22 July 2019

Chair: Yutaka Ohno

- |               |      |                                                                                                                                                                                                              |
|---------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | SEI1 | <b>Lian-Mao Peng</b> (Peking University)<br><i>Carbon Nanotube Based TFT and Optoelectronic Devices and Systems</i>                                                                                          |
| 14:40 - 15:00 | SEI2 | <b>Jianwen Zhao</b> (Chinese Academy of Sciences)<br><i>High-Performance Printed Carbon Nanotube Thin Film Transistors and Their Applications for Printed Logic Gates, Circuits and Neuromorphic Devices</i> |
| 15:00 - 15:20 | SEI3 | <b>Theodore Gao</b> (Stanford University)<br><i>Improving Inkjet-Printed Carbon Nanotube Transistors via Flocculation</i>                                                                                    |

10 minute break

Chair: Lianmao Peng

- |               |      |                                                                                                                                                                                                         |
|---------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SEI4 | <b>Kimmo Mustonen</b> (University of Vienna)<br><i>Optimising Single-Walled Carbon Nanotube Network Conductivity via Tunnelling Barrier Modifications</i>                                               |
| 15:50 - 16:10 | SEI5 | <b>Nicolai F. Hartmann</b> (neaspec GmbH)<br><i>Nanoscale Conductivity Mapping in Graphene and Carbon Nanotubes Through Mid-IR and Terahertz Scattering-Type Scanning Near-Field Optical Microscopy</i> |
| 16:10 - 16:30 | SEI6 | <b>Atsuko Sekiguchi</b> (AIST)<br><i>Application and Fabrication Process Development of Long Single Walled Carbon Nanotubes and its Metal Composite</i>                                                 |

Coffee break

CCW Lobby

Chair: Qiang Zhang

- |               |      |                                                                                                                                                                |
|---------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | SEn1 | <b>Kenji Hata</b> (AIST)<br><i>Cu/CNT Composites: Next-Gen Lightweight High-Performance Copper Substitutes?</i>                                                |
| 14:40 - 15:00 | SEn2 | <b>Jeffrey Blackburn</b> (National Renewable Energy Laboratory)<br><i>Organic/Inorganic Hybrid Interfaces With SWCNTs for Energy Harvesting and Conversion</i> |
| 15:00 - 15:20 | SEn3 | <b>Yuan Chen</b> (University of Sydney)<br><i>Carbon Materials Assisted Designs of Electrocatalysts</i>                                                        |

10 minute break

Chair: Yuan Chen

- |               |      |                                                                                                                                                                                                 |
|---------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SEn4 | <b>Cheng-Meng Chen</b> (Chinese Academy of Sciences)<br><i>Graphene and Porous Carbon for Supercapacitor Applications</i>                                                                       |
| 15:50 - 16:10 | SEn5 | <b>Eduardo Gracia-Espino</b> (Umeå University)<br><i>Surface Activation of Carbon-Based Nanomaterials for Oxygen Reduction Reaction: in the Search of Efficient Metal-Free Electrocatalysts</i> |
| 16:10 - 16:30 | SEn6 | <b>Hengxing Ji</b> (University of Science and Technology of China)<br><i>Carbon Based Current Collectors for Lithium-Metal Batteries</i>                                                        |

Coffee break

CCW Lobby

Monday  
22 July 2019

Chair: Annick Loiseau

- |               |      |                                                                                                                                                                                               |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | S2D1 | <b>Xavier Marie</b> (CNRS - INSA Toulouse)<br><i>Exciton Linewidth Approaching the Homogeneous Limit in MoS<sub>2</sub> Based Van Der Waals Heterostructures</i>                              |
| 14:40 - 15:00 | S2D2 | <b>Sven Borghardt</b> (Forschungszentrum Jülich)<br><i>Radially Polarized Light Beams From Spin-Forbidden Dark Excitons in Monolayer WSe<sub>2</sub></i>                                      |
| 15:00 - 15:20 | S2D3 | <b>Christoph Kastl</b> (Walter-Schottky-Institut - TU München)<br><i>Effects of Defects on Band Structure and Excitons in WS<sub>2</sub> Revealed by Nanoscale Photoemission Spectroscopy</i> |

10 minute break

Chair: Christoph Stampfer

- |               |      |                                                                                                                                                                                               |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | S2D4 | <b>Christian Schneider</b> (Julius-Maximilians-Universität Würzburg)<br><i>Condensation and Expansion of Cavity Polaritons Based on Two-Dimensional Crystals</i>                              |
| 15:50 - 16:10 | S2D5 | <b>Naga Anirudh Peyyety</b> (Technische Universität Darmstadt)<br><i>Probing Enhanced Light-Matter Interaction in Graphene on Plasmonic-Photonic Crystals by Raman Spectroscopy</i>           |
| 16:10 - 16:30 | S2D6 | <b>Martin Kroner</b> (ETH Zürich)<br><i>Pump-Probe Spectroscopy of Polaritons in a MoSe<sub>2</sub> Monolayer in the Presence of Itinerant Electrons: Signatures of Optical Amplification</i> |

Coffee break

CCW Lobby



Chair: Yan Li

- |               |      |                                                                                                                                                               |
|---------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SSy1 | <b>Avetik Harutyunyan</b> (Honda Research Institute USA Inc.)<br><i>Origin of Chirality in Carbon Nanotubes: Interplay Between Catalyst and Carbon Nuclei</i> |
| 14:20 - 14:40 | SSy1 | <b>Don Futaba</b> (AIST)<br><i>Advances in the Synthesis of Single Wall Carbon Nanotubes by the Water-Assisted CVD Method</i>                                 |
| 14:40 - 15:00 | SSy2 | <b>Kaili Jiang</b> (Tsinghua University)<br><i>Growing Highly Pure Semiconducting Carbon Nanotubes for Nanoelectronics by Electrotwisting the Helicity</i>    |
| 15:00 - 15:20 | SSy3 | <b>Feng Yang</b> (Peking University)<br><i>Atomic Scale in-Situ Study on Carbon Nanotube Growth From Co-Co<sub>3</sub>C Catalysts</i>                         |

10 minute break

Chair: Sofie Cambré

- |               |      |                                                                                                                                           |
|---------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SSy4 | <b>Vincent Jourdain</b> (University of Montpellier)<br><i>Studying the Growth of Single-Walled Carbon Nanotubes by Optical Means</i>      |
| 15:50 - 16:10 | SSy5 | <b>Rong Xiang</b> (University of Tokyo)<br><i>One-Dimensional Van Der Waals Heterostructure Nanotubes: Synthesis and Growth Mechanism</i> |
| 16:10 - 16:30 | SSy6 | <b>Lei Shi</b> (Sun Yat-sen University)<br><i>In-Situ Synthesis of the Confined Linear Carbon Chains</i>                                  |

Coffee break

CCW Lobby

Monday  
22 July 2019

Chair: Yoshiuki Miyamoto

- |               |      |                                                                                                                                     |
|---------------|------|-------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | STh1 | <b>Riichiro Saito</b> (Tohoku University)<br><i>Controlling Helicity of Circularly Polarized Light in Low-Dimensional Materials</i> |
| 14:40 - 15:00 | STh2 | <b>Malte Selig</b> (Technische Universität Berlin)<br><i>Bright and Dark Exciton Dynamics in Transition Metal Dichalcogenides</i>   |
| 15:00 - 15:20 | STh3 | <b>Hongyi Yu</b> (University of Hong Kong)<br><i>Moiré Physics in Heterobilayer and Homobilayer 2D Semiconductors</i>               |

10 minute break

Chair: James Elliott

- |               |      |                                                                                                                                                                            |
|---------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | STh4 | <b>Hernán Santos</b> (Autonomous University of Madrid)<br><i>Controlling Spin-Polarized Currents in Carbon Nanotubes: Rashba Spin-Orbit Effects and Defect Engineering</i> |
| 15:50 - 16:10 | STh5 | <b>Deborah Prezzi</b> (University of Modena and Reggio Emilia)<br><i>Light Emission From Ultranarrow Graphene Nanoribbons: Insights From Ab Initio Simulations</i>         |
| 16:10 - 16:30 | STh6 | <b>Charlotte Vets</b> (University of Antwerp)<br><i>The CNT-Metal Adsorption Energy: Key for Chirality Selective Growth?</i>                                               |

Coffee break

CCW Lobby

## Poster Sessions

CCW Lobby Level

17:00 - 18:30

Poster Session 1 (odd poster numbers)

19:00 - 21:00

Poster Session 2 (even poster numbers)

Monday  
22 July 2019

## Overview of Monday's oral presentations

Monday, 22 July 2019

Plenary Venue

08:30 - 09:15

(BoA p32) Franconia Hall

K1 (Keynote)

*Chirality Controlled Growth of Horizontal Carbon Nanotubes Array With Designed Catalysts*

**Jin Zhang**

09:15 - 09:40

(BoA p33) Franconia Hall

I1 (Invited)

*in Situ Study of Single-Walled Carbon Nanotube Growth With Cobalt and Tungsten-Cobalt Intermetallic Compound Catalysts*

**Yan Li**, Feng Yang, Haofei Zhao, Rongming Wang

09:40 - 10:05

(BoA p34) Franconia Hall

I2 (Invited)

*Multiscale Hydrophobic Interaction Between Carbon Nanotubes, Surfactants, and Polysaccharide Gels*

**Hiromichi Kataura**, Guowei Wang, Mayumi Tsuzuki, Takeshi Tanaka

10:35 - 11:00

(BoA p35) Franconia Hall

C1 (Contributed)

*Momentum-Resolved Dielectric Response of Free Standing Black Phosphorus Down to the Monolayer*

**Annick Loiseau**

11:00 - 11:25

(BoA p36) Franconia Hall

I3 (Invited)

*Resolving Carbon Nanotube Structures by DNA*

**Ming Zheng**

11:25 - 11:50

(BoA p37) Franconia Hall

C2 (Contributed)

*Separation of Single Walled Carbon Nanotubes in One to Three Steps Using pH Modulated Aqueous Two-Phase Extraction*

**Han Li**, Georgy Gordeev, Oisin Garrity, Naga Anirudh Peyyety, Pranaav Balaji Selvasundaram, Simone Dehm, Sofie Cambré, Wim Wenseleers, Stephanie Reich, Ralph Krupke, Ming Zheng, Jeffrey Fagan, Benjamin S. Flavel

11:50 - 12:15

(BoA p38) Franconia Hall

I4 (Invited)

*Computations To Explain or Predict, in Low-Dimensional Materials*

**Boris Yakobson**, Ksenia Bets

Monday, 22 July 2019

Electronics Symposium

14:00 - 14:40

(BoA p39) Panorama 11

SEI1 (Overview)

*Carbon Nanotube Based TFT and Optoelectronic Devices and Systems*

**Lian-Mao Peng**

- 14:40 - 15:00** (BoA p40) **Panorama 11**  
*SEI2 (Contributed)* *High-Performance Printed Carbon Nanotube Thin Film Transistors and Their Applications for Printed Logic Gates, Circuits and Neuromorphic Devices*  
**Jianwen Zhao**, Zheng Cui, Miaomiao Wei, Tianqi Gao
- 15:00 - 15:20** (BoA p41) **Panorama 11**  
*SEI3 (Contributed)* *Improving Inkjet-Printed Carbon Nanotube Transistors via Flocculation*  
**Theodore Gao**, Francisco Molina-Lopez, Ting Lei, Zhenan Bao
- 15:30 - 15:50** (BoA p42) **Panorama 11**  
*SEI4 (Invited)* *Optimising Single-Walled Carbon Nanotube Network Conductivity via Tunnelling Barrier Modifications*  
**Kimmo Mustonen**, Viera Skakalova, Liao Yongping, Semir Tulic, Esko I. Kauppinen, Jani Kotakoski
- 15:50 - 16:10** (BoA p43) **Panorama 11**  
*SEI5 (Contributed)* *Nanoscale Conductivity Mapping in Graphene and Carbon Nanotubes Through Mid-IR and Terahertz Scattering-Type Scanning Near-Field Optical Microscopy*  
**Nicolai F. Hartmann**, Philip Schaefer, Adrian Cernescu, Andreas J. Huber
- 16:10 - 16:30** (BoA p44) **Panorama 11**  
*SEI6 (Contributed)* *Application and Fabrication Process Development of Long Single Walled Carbon Nanotubes and its Metal Composite*  
**Atsuko Sekiguchi**, Atsuko Sekiguchi, Rajyashree Sundaram, Yuichi Kato, Guohai Chen, Don Futaba, Takeo Yamada, Kenji Hata

Monday, 22 July 2019

Energy Symposium

- 14:00 - 14:40** (BoA p45) **Franconia Hall**  
*SEn1 (Overview)* *Cu/CNT Composites: Next-Gen Lightweight High-Performance Copper Substitutes?*  
**Kenji Hata**
- 14:40 - 15:00** (BoA p46) **Franconia Hall**  
*SEn2 (Invited)* *Organic/Inorganic Hybrid Interfaces With SWCNTs for Energy Harvesting and Conversion*  
**Jeffrey Blackburn**, Dana Sulas, Hyun Suk Kang, Severin Habisreutinger, Justin Johnson, Andrew Ferguson, Elisa Miller-Link
- 15:00 - 15:20** (BoA p47) **Franconia Hall**  
*SEn3 (Invited)* *Carbon Materials Assisted Designs of Electrocatalysts*  
**Yuan Chen**
- 15:30 - 15:50** (BoA p48) **Franconia Hall**  
*SEn4 (Invited)* *Graphene and Porous Carbon for Supercapacitor Applications*  
**Cheng-Meng Chen**

**15:50 - 16:10****(BoA p49) Franconia Hall***SEn5 (Invited)**Surface Activation of Carbon-Based Nanomaterials for Oxygen Reduction Reaction: in the Search of Efficient Metal-Free Electrocatalysts***Eduardo Gracia-Espino****16:10 - 16:30****(BoA p50) Franconia Hall***SEn6 (Invited)**Carbon Based Current Collectors for Lithium-Metal Batteries***Hengxing Ji**, Song Jin, Zhaowei Sun**Monday, 22 July 2019****2D Materials Symposium****14:00 - 14:40****(BoA p51) Panorama 13***S2D1 (Overview)**Exciton Linewidth Approaching the Homogeneous Limit in MoS<sub>2</sub> Based Van Der Waals Heterostructures***Xavier Marie**, C. Robert, B. Han, H. Fang, E. Courtade, B. Urbaszek, T. Amand, M. Glazov, M. Semina, L. Golub, T. Taniguchi, K. Watanabe**14:40 - 15:00****(BoA p52) Panorama 13***S2D2 (Contributed)**Radially Polarized Light Beams From Spin-Forbidden Dark Excitons in Monolayer WSe<sub>2</sub>***Sven Borghardt**, Jhih-Sian Tu, Takashi Taniguchi, Kenji Watanabe, Beata Kardynal**15:00 - 15:20****(BoA p53) Panorama 13***S2D3 (Contributed)**Effects of Defects on Band Structure and Excitons in WS<sub>2</sub> Revealed by Nanoscale Photoemission Spectroscopy***Christoph Kastl****15:30 - 15:50****(BoA p54) Panorama 13***S2D4 (Invited)**Condensation and Expansion of Cavity Polaritons Based on Two-Dimensional Crystals***Christian Schneider****15:50 - 16:10****(BoA p55) Panorama 13***S2D5 (Contributed)**Probing Enhanced Light-Matter Interaction in Graphene on Plasmonic-Photonic Crystals by Raman Spectroscopy***Naga Anirudh Peyyety**, Aimi Abass, Adnan Riaz, Simone Dehm, Carsten Rockstuhl, Aravind Vijayaraghavan, Martin Kalbac, Ralph Krupke**16:10 - 16:30****(BoA p56) Panorama 13***S2D6 (Invited)**Pump-Probe Spectroscopy of Polaritons in a MoSe<sub>2</sub> Monolayer in the Presence of Itinerant Electrons: Signatures of Optical Amplification***Martin Kroner**

## Monday, 22 July 2019

## Synthesis Symposium

14:00 - 14:20

(BoA p57) Panorama 12

SSy1 (Invited)

*Origin of Chirality in Carbon Nanotubes: Interplay Between Catalyst and Carbon Nuclei***Avetik Harutyunyan**

14:20 - 14:40

(BoA p58) Panorama 12

SSy2 (Invited)

*Advances in the Synthesis of Single Wall Carbon Nanotubes by the Water-Assisted CVD Method***Don Futaba**

14:40 - 15:00

(BoA p59) Panorama 12

SSy3 (Invited)

*Growing Highly Pure Semiconducting Carbon Nanotubes for Nanoelectronics by Electrotwisting the Helicity***Kaili Jiang**, Jiangtao Wang, Xiang Jin, Zebin Liu, Bingyu Xia

15:00 - 15:20

(BoA p60) Panorama 12

SSy4 (Invited)

*Atomic Scale in-Situ Study on Carbon Nanotube Growth From Co-Co<sub>3</sub>C Catalysts***Feng Yang**, Yan Li

15:30 - 15:50

(BoA p61) Panorama 12

SSy5 (Contributed)

*Studying the Growth of Single-Walled Carbon Nanotubes by Optical Means***Vincent Jourdain**, Huy-Nam Tran, Vladimir Pimonov, Léonard Monniello, Hugo Navas, Matthieu Picher, Thierry Michel, Rémy Vialla, Guillaume Prévot, Saïd Tahir, Eric Anglaret, Amandine Andrieux-Ledier, Frédéric Fossard, Annick Loiseau, Akinari Kozawa, Takahiro Maruyama

15:50 - 16:10

(BoA p62) Panorama 12

SSy6 (Invited)

*One-Dimensional Van Der Waals Heterostructure Nanotubes: Synthesis and Growth Mechanism***Rong Xiang**

16:10 - 16:30

(BoA p63) Panorama 12

SSy7 (Contributed)

*in-Situ Synthesis of the Confined Linear Carbon Chains***Lei Shi**, Ryosuke Senga, Kazu Suenaga, Paola Ayala, Thomas Pichler

## Monday, 22 July 2019

## Theory Symposium

14:00 - 14:40

(BoA p64) Panorama 10

STh1 (Overview)

*Controlling Helicity of Circularly Polarized Light in Low-Dimensional Materials***Riichiro Saito**

14:40 - 15:00

(BoA p65) Panorama 10

STh2 (Invited)

*Bright and Dark Exciton Dynamics in Transition Metal Dichalcogenides***Malte Selig**, Dominik Christiansen, Florian Katsch, Ermin Malic, Andreas Knorr

**15:00 - 15:20****(BoA p66) Panorama 10***STh3 (Invited)**Moiré Physics in Heterobilayer and Homobilayer 2D Semiconductors***Hongyi Yu****15:30 - 15:50****Panorama 10***STh4 (Contributed)**Controlling Spin-Polarized Currents in Carbon Nanotubes: Rashba Spin-Orbit Effects and Defect Engineering***Hernán Santos**, Leonor Chico, José Enrique Alvarelos, Andrea Latgé**15:50 - 16:10****(BoA p68) Panorama 10***STh5 (Invited)**Light Emission From Ultranarrow Graphene Nanoribbons: Insights From Ab Initio Simulations***Deborah Prezzi****16:10 - 16:30****(BoA p69) Panorama 10***STh6 (Contributed)**the CNT-Metal Adsorption Energy: Key for Chirality Selective Growth?***Charlotte Vets**, Daniel Hedman, J. Andreas Larsson, Erik C. Neyts

## Overview of Monday's poster presentations

Monday, 22 July 2019

Plenary Venue

**17:00 - 18:30****(BoA p72) P001***Poster**Optical Spectroscopy of Doped Single Wall Carbon Nanotubes***Riichiro Saito**, Daria Sacco, Ahmad R. Nugraha, Shoufie Ukhtary, Daria Kopylova, Albert G. Nasibulin**17:00 - 18:30****(BoA p73) P003***Poster**Drawable Single- and Double-Walled Carbon Nanotube Forest Grown From Dip-Coated Iron Nanoparticle***Yuya Abe**, Motoyuki Karita, Takayuki Nakano, Yoku Inoue**17:00 - 18:30****(BoA p74) P005***Poster**Role of Sulfur in Floating-Catalyst CVD Growth of Single-Walled Carbon Nanotubes for Transparent Conductive Film Applications***Saeed Ahmad**, Er-Xiong Ding, Qiang Zhang, Hua Jiang, Esko I. Kauppinen**17:00 - 18:30****(BoA p75) P009***Poster**Modulating Single-Walled Carbon Nanotube Opto-Electronic Properties by Dye Confinement***Laurent Alvarez**, Romain Chambard, Geraud Delport, Lucie Orcin-Chaix, Nicolas Izard, Bruno Jousset, Stéphane Campidelli, Yuta Sato, Kazu Suenaga, Pascal Puech, Jean-Sébastien Lauret, Guillaume Cassabois, Jean-Louis Bantignies



17:00 - 18:30

(BoA p76) P011

Poster

*Carbon Nanotube-Catalyst Interface Segregation and the Quest for Chirality Control***Ksenia V. Bets**, Evgeni S. Penev, Boris I. Yakobson

17:00 - 18:30

(BoA p77) P013

Poster

*Chemistry of Carbon Nanotubes as  $\Pi$ -Conjugated Macromolecules – Realizing the Promise of Properties-by-Design Approach***Slawomir Boncel**, Rafal Jedrysiak, Bertrand Jozwiak, Anna Kolanowska, Anna Kuziel, Patrycja Wasik, Marzena Dzida, Artur Herman

17:00 - 18:30

(BoA p78) P015

Poster

*Carbon-Coated Silver Nanowires as Interconnects and Their Electrical Breakdown Mechanism***Pedro Costa**, Nitin Batra

17:00 - 18:30

(BoA p79) P017

Poster

*Versatile Manipulation Of Nanostructured Noble Metal Aerogels***Ran Du**

17:00 - 18:30

(BoA p80) P019

Poster

*Analytical Ultracentrifugation Based Quantification of the Packing Density of Linear Alkanes Inside Electric Arc SWCNTs***Jeffrey Fagan**

17:00 - 18:30

(BoA p81) P021

Poster

*Separation of Large Diameter Single Walled Carbon Nanotubes Using Aqueous Two-Phase Extraction***Benjamin Flavel**, Han Li, Georgy Gordeev, Oisin Garrity, Selvasundaram Pranaav, Anirudh Peyyety, Sofie Cambré, Wim Wenseleers, Ralph Krupke, Stephanie Reich, Ming Zheng, Jeffrey Fagan

17:00 - 18:30

(BoA p82) P023

Poster

*Characterization of the Purity of Sorted SWCNT Samples by Comparing Absorption, Resonant Raman Scattering and PLE Spectroscopy With HR-TEM.***Salome Forel**, Alice Castan, Joeri Defiliet, Dmitry Levshov, Frederic Fossard, Wim Wenseleers, Sofie Cambré, Annick Loiseau

17:00 - 18:30

(BoA p83) P025

Poster

*Comprehensive Study on the Device Performance of Ultra-Scaled CNTFETs***Florian Fuchs**, Anibal Pacheco-Sanchez, Andreas Zienert, Sven Mothes, Martin Claus, Sibylle Gemming, Jörg Schuster

17:00 - 18:30

(BoA p84) P027

Poster

*Covalent Honeycomb Networks Comprising Triptycene and Polyphenyl***Yasumaru Fujii**, Mina Maruyama, Susumu Okada

17:00 - 18:30

(BoA p85) P029

Poster

*Efficient CVD Growth of Single-Wall Carbon Nanotube Carpets Using Industrial Gaseous Waste as a Feedstock*

**Placidus Amama**, Haider Almkhelfe, Xu Li, Rahul Rao

Monday, 22 July 2019

Synthesis Symposium

17:00 - 18:30

(BoA p86) P033

Poster

*Brightening of Long, Polymer-Wrapped Carbon Nanotubes by Large Scale Sp<sup>3</sup> Functionalization*

**Felix Berger**, Tobias Kutsch, Tim Nowack, Jan Lüttgens, Sebastian Lindenthal, Lucas Kistner, Lukas Bongartz, Jana Zaumseil

17:00 - 18:30

(BoA p87) P035

Poster

*Growth of Vertically Aligned Carbon Nanotubes on Aluminium Substrate at Low Temperature Through a One-Step Thermal CVD Process*

**Antoine Combrisson**, Fabien Nassoy, Mathieu Pinault, Cécile Reynaud, Emeline Charon, Martine Mayne-L'Hermite

17:00 - 18:30

(BoA p88) P037

Poster

*in Situ PANI/MWNTs Nanocomposites Hydrothermal Synthesis*

**Fahima Djefafli**, Ouanassa GUellati, Assia Nait-Merzoug, Aicha Harat, Simon Detriche, Zineb Mekhalif, Mohamed Guerioune

17:00 - 18:30

(BoA p89) P039

Poster

*Self-Assembly of Polymer-Grafted Carbon Nanotubes: Controlling Interactions From the Nano to the Macroscale*

**Martha V. Escarcega-Bobadilla**, Gustavo A. Zelada-Guillen

17:00 - 18:30

(BoA p90) P041

Poster

*Tuning Bimetallic Catalysts for a Selective Growth of SWCNTs*

**Salome Forel**, Alice Castan, Hakim Amara, Ileana Florea, Frederic Fossard, Laure Catala, Christophe Bichara, Talal Mallah, Vincent Huc, Annick Loiseau, Costel-Sorin Cojocar

17:00 - 18:30

(BoA p91) P043

Poster

*Growth Mechanism and Controllable Preparation of High-Purity Semiconducting Carbon Nanotubes*

**Jun Gao**, Zhenxing Zhu, Fei Wei

17:00 - 18:30

(BoA p92) P045

Poster

*Engineering Polymer Conformation for Efficient Carbon Nanotube Sorting*

**Theodore Gao**, Zehao Sun, Xuzhou Yan, Zhenan Bao

17:00 - 18:30

(BoA p93) P047

Poster

*a Cross-Linked Graphene/Diketopyrrolopyrrole Hybrid With Intriguing Far-Red to Near Infrared Absorption Features*

**Teresa Gatti**

17:00 - 18:30

(BoA p94) P049

Poster

*Synthesis and Characterization of Gold-Decorated Nanosheets From Liquid-Exfoliated WS<sub>2</sub>*

**Sebastian Grieger**, Claudia Backes

17:00 - 18:30

(BoA p95) P051

Poster

*Synthesis Condition of CNT Arrays for Fabricating the Double-Walled Carbon Nanotube Yarns by Dry-Spinning*

**Hirotaka Inoue**, Tomohiro Nakagawa, Paneer Selvam Karthik, Masaki Hada, Takeshi Nishikawa, Yoshifumi Yamashita, Yasuhiko Hayashi

17:00 - 18:30

(BoA p96) P053

Poster

*Isolation of Carbon Nanotubes With Narrow-Band Light Emission Characteristics in a Single Step*

**Dawid Janas**, Edyta Turek, Tomohiro Shiraki, Tomonari Shiraishi, Tamehito Shiga, Tsuyohiko Fujigaya

17:00 - 18:30

(BoA p97) P055

Poster

*Rheological and Thermal Properties of IoNanoFluids Prepared From Various Morphology CNTs Synthesized Using Selected Organometallic Catalysts*

**Rafał G. Jędrysiak**, Bertrand Jóźwiak, Anna Kolanowska, Anna Kuziel, Marzena Dzida, Sławomir Boncel

17:00 - 18:30

(BoA p98) P057

Poster

*Sulfur-Source Independent Production of Predominantly Single-Wall Carbon Nanotube Fibres*

**Adarsh Kaniyoor**, John Bulmer, Thuri Gspann, Jenifer Mizen, James Ryley, Jeronimo Terrones, Alan Windle, James Elliott

17:00 - 18:30

(BoA p99) P059

Poster

*Efficient Synthesis of Defect-Free Single-Walled Carbon Nanotube From Solid Nanoparticles by Chemical Vapor Deposition at High-Temperature*

**Yoshihiro Kobayashi**

17:00 - 18:30

(BoA p100) P061

Poster

*Friedel-Crafts Alkylation of Carbon Nanotubes Toward Synthesis of Thermally Active Components of IoNanoFluids*

**Anna Kolanowska**, Rafał Jędrysiak, Bertrand Jóźwiak, Anna Kuziel, Marzena Dzida, Sławomir Boncel

17:00 - 18:30

(BoA p101) P063

Poster

*Synthesis and Thermal Properties of Helical CNTs Ionic Liquid Nanofluids*

**Anna Kuziel**, Rafał Jędrysiak, Bertrand Jóźwiak, Anna Kolanowska, Marzena Dzida, Sławomir Boncel

17:00 - 18:30

(BoA p102) P065

Poster

*Synthesis of Thin Multi-Walled Carbon Nanotubes With Narrow Diameter Distribution Induced From Molybdenum-Cobalt Alloy Catalyst*

**Kang-Nyeoung Lee**, Dae Young Park, Duc Anh Nguyen, Young Chul Choi, Mun Seok Jeong, Sang Won Lee

17:00 - 18:30

(BoA p103) P067

Poster

*Facile Catalyst Deposition Using Mist for Fluidized-Bed Production of Sub-Millimeter-Long Carbon Nanotubes*

**Mochen Li**, Maeda Risa, Toshio Osawa, Hisashi Sugime, Suguru Noda

17:00 - 18:30

(BoA p104) P069

Poster

*Carburization of Fe/Ni Bimetal Catalyst for Efficient Growth of Single-Walled Carbon Nanotubes*

**Dewu Lin**, Shuchen Zhang, Jin Zhang

17:00 - 18:30

(BoA p105) P071

Poster

*Multiple-Cycle Deposition of Pure Metal Catalyst To Grow High-Density SWNT Arrays*

**Weiming Liu**, Lianming Tong, Jin Zhang

17:00 - 18:30

(BoA p106) P105

Poster

*Mechanism of Global Alignment of Carbon Nanotubes During Vacuum Filtration*

**Alina Lyuleeva**, Natsumi KomatsuDaeun KimRobert ChenWeilu GaoKazuhiro YanagiJunichiro Kono

Monday, 22 July 2019

2D Materials Symposium

17:00 - 18:30

(BoA p107) P073

Poster

*Ring GQDs in Fluorinated Graphene Matrices*

**Leonid Chernozatonskii**, Anastasiya Artyukh, Stefano Bellucci, Victor Demin, Dmitrii Kvashnin, Irina Antonova, Nadegda Nebogatikova

17:00 - 18:30

(BoA p108) P075

Poster

*The Effects of Sulfurization on the MoS<sub>2</sub> Growth*

Changhwan Choi, Moon Suk Choi, Andrey Sokolov Sergeevich, Yu-Rim Jeon, Hoon **Hee Han**

17:00 - 18:30

(BoA p109) P077

Poster

*Scalable Production of Graphene Using Electrochemical Exfoliation in Compressed Reactors*

**Micah Green**

17:00 - 18:30

(BoA p110) P079

Poster

*Facile Preparation of Thin Film Transistors Based on Van Der Waals Heterostructures With MoS<sub>2</sub> and Single-Walled Carbon Nanotube Films*

**Chao Jiang**

17:00 - 18:30

(BoA p111) P081

Poster

*Fabrication of Mo<sub>6</sub>S<sub>6</sub> Nanowire Terminated Edges in Monolayer Molybdenum Disulfide*

**Chuanhong Jin**, Xiaowei Wei Huang, Xujing Ji Wang

17:00 - 18:30

(BoA p112) P083

Poster

*Photophysical Properties and Applications of Exfoliated Near Infrared  
Fluorescent Calcium Copper Silicate Nanosheets*

**Sebastian Kruss**

Monday, 22 July 2019

Theory Symposium

17:00 - 18:30

(BoA p113) P085

Poster

*Thermoelectric Properties of Chemically Modified Carbon Nanotubes: First  
Principles Simulations*

**Nayu Araki**

17:00 - 18:30

(BoA p114) P087

Poster

*Calculating Lattice Thermal Conductivity of Carbon Nanotubes: a  
Comparison of Results From Molecular Dynamics Simulation and  
Boltzmann Transport Theory*

**Daniel Bruns**, Jörg Rottler, A. Srikantha Phani, Alireza Nojeh

17:00 - 18:30

(BoA p115) P089

Poster

*Actuation of Aligned Carbon Nanotube Arrays*

**Sebastian Geier**

17:00 - 18:30

(BoA p116) P091

Poster

*Novel Plasmonics and Transports of Topological Dirac Materials*

**Eddwi Haseo**

17:00 - 18:30

(BoA p117) P093

Poster

*Reactive Molecular Dynamics Simulations Of Van Der Waals Epitaxy: Can  
We Grow Phosphorene?*

**Tibor Höltzl**, Balázs Orbán

17:00 - 18:30

(BoA p118) P095

Poster

*Computational Study on Electronic Transport in Doped Carbon Nanotubes  
Focusing on Disappearance of Localization Phenomena due to Phonon  
Scattering*

**Keisuke Ishizeki**, Kenji Sasaoka, Takahiro Yamamoto

17:00 - 18:30

(BoA p119) P097

Poster

*Formation Process of 2D Materials on Substrates Using Evolutionary  
Algorithm*

**Dmitry Kvashnin**, Pavel Sorokin, Alexander Kvashnin

17:00 - 18:30

(BoA p120) P099

Poster

*Multiphase Coexistence of MBE-Growth Stanene on Cu (111)*

**Jia Li**

17:00 - 18:30

(BoA p121) P101

Poster

*Ab Initio Simulation on Thermoelectric Properties of Nitrogen-Doped  
Carbon Nanotubes*

**Manaho Matsubara**, Takahiro Yamamoto

17:00 - 18:30

(BoA p122) P103

Poster

*Effects of Local Distortion on Thermoelectric Properties of Carbon Nanotubes***Keiichi Matsumoto**, Takahiro Yamamoto

Monday, 22 July 2019

Plenary Venue

19:00 - 21:00

(BoA p123) P002

Poster

*One-Step Fabrication of Carbon Nanotube Fibers Using Chemical Vapor Deposition Method***Toshihiko Fujimori**, Koichiro Nakamura, Kanade Matsuo, Hideki Masuda, Jun Otsuka, Daisuke Tanioka, Takeshi Hikata, Soichiro Okubo, Yoshikazu Ito, Jun-ichi Fujita

19:00 - 21:00

(BoA p124) P004

Poster

*Long CNT Growth With Plastic Deformation of Spindle-Shaped Bottom Graphitic Shells in Laminar-Flow CVD***Jun-ichi Fujita**, Kanade Matsuo, Kentaro Wayanabe, Yu Kikuchi, Hideki Masuda, Toshihiko Fujimori, Soichiro Okubo, Takeshi Hikata

19:00 - 21:00

(BoA p125) P006

Poster

*Field Emission Property of Bilayer Graphene Edges Under an External Electric Field***Yanlin Gao**, Susumu Okada

19:00 - 21:00

(BoA p126) P008

Poster

*Heating, Curing, and Welding of 3D Printed Carbon Nanotube-Polymer Systems by Locally Induced RF Heating***Micah Green**

19:00 - 21:00

(BoA p127) P010

Poster

*Enhancement of CNT Textiles Through Bundle Alignment and Catalyst Sweating by Photonic Post-Processing***Thurid Gspann**, John Bulmer, Joe Stallard, Adarsh Kaniyoor, Jennifer Mizen, James Elliott

19:00 - 21:00

(BoA p128) P012

Poster

*Ultrafast Combinational Techniques Revealing Reduction Mechanisms of Graphene Oxide via Photoexcitation and Heating***Masaki Hada**, Kiyoshi Miyata, Satoshi Ohmura, Shin-ya Koshihara, Yasuhiko Hayashi, Ken Onda, Yuta Nishina

19:00 - 21:00

(BoA p129) P014

Poster

*Measuring the Current–Voltage Characteristics of Isolated Carbon Nanotubes Under Transient Temperature Conditions***Kaori Hirahara**, Michihiro Hashimoto

19:00 - 21:00

(BoA p130) P016

Poster

*Interaction Between Layers of Single-Walled Carbon Nanotube Coated With Boron Nitride Nanotube***Kaoru Hisama**, Susumu Okada, Shohei Chiashi, Shigeo Maruyama

19:00 - 21:00

(BoA p131) P018

Poster

*CO<sub>2</sub> Reduction Using Transition Metal Decorated Phosphorene***Tibor Höltzl**, Endre Faragó

19:00 - 21:00

(BoA p132) P020

Poster

*Scalable and Continuous Production of Small Diameter Single-Walled Carbon Nanotubes With Narrow Chirality Distribution***Aqeel Hussain**, Er-Xiong Ding, Saeed Ahmad, Yongping Liao, Mohammad Tavakkoli, Qiang Zhang, Hua Jiang, Kimmo Mustonen, Esko I. Kauppinen

19:00 - 21:00

(BoA p133) P022

Poster

*Quantum Transport Measurements of MoS<sub>2</sub> Nanotubes***Andreas K. Hüttel**, Simon Reinhard, Luka Pirker, Christian Bäuml, Maja Remškar

19:00 - 21:00

(BoA p134) P024

Poster

*Third-Order Nonlinear Optical Properties in Photo-Reduced Graphene Oxide***Masao Ichida**, Yuto Hosomi, Kazunari Matsuda, Hiroaki Ando

19:00 - 21:00

(BoA p135) P026

Poster

*Atomic Scale Structural Identification and Evolution of Co-W-C Ternary SWCNT Catalytic Nanoparticles: HR-STEM Imaging on SiO<sub>2</sub>***Rong Xiang**, Akihito Kumamoto, Rong Xiang, Yan Li, Yuichi Ikuhara, Shigeo Maruyama

Monday, 22 July 2019

Synthesis Symposium

19:00 - 21:00

(BoA p136) P028

Poster

*Peptide-Barrel Encapsulated Carbon Nanotubes***Florian A. Mann**, Jan Horlebein, Franziska Thomas, Sebastian Kruss

19:00 - 21:00

(BoA p137) P030

Poster

*Pre-Reactor Pyrolytic Reaction of Ethylene To Improve Growth Efficiency of Single-Walled Carbon Nanotubes Synthesis***Naoyuki Matsumoto**, Sachiko Ishizawa, Michiko Irie, Megumi Hirano, Kenji Hata, Don Futaba

19:00 - 21:00

(BoA p138) P032

Poster

*Effect of Ferrocene and Hydrogen Concentrations on the Growth of Vertically Aligned Carbon Nanotubes by Aerosol-Assisted Chemical Vapor Deposition***Martine Mayne-L'Hermite**, Emeline Charon, Mathieu Pinault, Martine Mayne-L'Hermite

19:00 - 21:00

(BoA p139) P034

Poster

*Chiral Structure Dependence of the Strength of Single-Walled Carbon Nanotubes***Yuhei Miyauchi**, Akira Takakura, Ko Beppu, Taishi Nishihara, Akihito Fukui, Takahiro Kozeki, Takahiro Namazu, Kenichiro Itami

19:00 - 21:00

(BoA p140) P036

Poster

*Tuning the Carbon Single Wall Nanotube Growth With Carbon Solubility of Ni<sub>x</sub>Pt<sub>1-x</sub> Catalysts***Cora Moreira Da Silva**, Armelle Girard, Frédéric Fossard, Vincent Huc, Annick Loiseau, Costel-Sorin Cojocaru

19:00 - 21:00

(BoA p141) P038

Poster

*Observation in Situ of Carbon Nanotubes Growth Catalyzed by Nickel-Platinum Nano-Alloy***Cora Moreira Da Silva**, Mounib Bahri, Ileana Florea, Frédéric Fossard, Ovidiu Ersen, Armelle Girard, Annick Loiseau

19:00 - 21:00

(BoA p142) P040

Poster

*High Temperature Epitaxial Growth of Aligned Graphitic Fiber by Using Super-Aligned Carbon Nanotubes as Seeds***Wen Ning**, Peng Lei, Wen Ning, Shiwei Lv, Yufeng Luo, Wei Zhao, Xinhe Yang, Qingwei Li, Duanliang Zhou, Peng Liu, Qi Cai, Liang Liu, Lina Zhang, Jiaping Wang, Qunqing Li, Shoushan Fan, Kaili Jiang

19:00 - 21:00

(BoA p143) P042

Poster

*an Insight Into Single-Walled Carbon Nanotube Growth Onto Graphene Crystals Using Ir as a Catalyst***Kamal Prasad Sharma**, Takuya Okada, Aliza K Sharma, Takahiro Maruyama

19:00 - 21:00

(BoA p144) P044

Poster

*Doping of Collapsed Carbon Nanotubes by Filling of Edges Cavities***Emmanuel Picheau**, Ferdinand Hof, Hassan Saadaoui, Alain Pénicaud

19:00 - 21:00

(BoA p145) P046

Poster

*Floating Catalyst CVD Synthesis of Single-Walled Carbon Nanotubes From Carbide Catalyst***Liu Qian**, Ying Xie, Jin Zhang

19:00 - 21:00

(BoA p146) P048

Poster

*Vertically-Aligned Carbon Nanotubes Directly Grown on Transparent Substrates as Potential Dark Matter Target***Ilaria Rago**, Maria Grazia Betti, Carlo Mariani, Francesco Pandolfi, Andrea Goldoni, Loredana Casalis, Denis Scaini, Gianluca Cavoto

19:00 - 21:00

(BoA p147) P050

Poster

*Controlling Nanoscale Architectonics of Natural Graphene-Like Carbon***Natalia Rozhkova**, Anna Kovalchuk, Sergey Rozhkov



19:00 - 21:00

(BoA p148) P052

Poster

*Measuring in Situ Length Distributions of Polymer-Wrapped Monochiral SWCNTs Dispersed in Toluene With Analytical Ultracentrifugation*

**Pranauv Balaji Selvasundaram**, Rainer Kraft, Wenshan Li, Regina Fischer, Manfred M Kappes, Frank Hennrich, Ralph Krupke

19:00 - 21:00

(BoA p149) P054

Poster

*Real-Time Mechanistic Study of Carbon Nanotube Anion Functionalisation Through Open Circuit Voltammetry.*

**Pichamon Sirisinudomkit**, Adam Clancy, David Anthony, Aaron Thong, Jake Greenfield, Maniesha Singh, Milo Shaffer

19:00 - 21:00

(BoA p150) P056

Poster

*Fundamental Parameters for Direct-Spinning of Carbon Nanotube Aerogels*

**Fiona Smail**, Adam Boies

19:00 - 21:00

(BoA p151) P058

Poster

*Molecular Layer Deposition of Crosslinked Single-Walled Carbon Nanotube Films*

**David Stringer**, Milo Shaffer

19:00 - 21:00

(BoA p152) P060

Poster

*Impact of Experimental Parameters on Solution-Processed Semi-Transparent Conductive Films of Carbon Nanotubes and Ethylene-Vinyl Acetate*

**Bernd Sturdza**, Giulio Mazzotta, Moritz K. Riede, Robin J. Nicholas

19:00 - 21:00

(BoA p153) P062

Poster

*Macroscopic Separation of Multi-Species Single-Chirality Enantiomers of Single-Wall Carbon Nanotubes*

**Xiaojun Wei**, Jiaming Cui, Linhai Li, Dehua Yang, Weiya Zhou, Sishen Xie, Hiromichi Kataura, Huaping Liu

19:00 - 21:00

(BoA p154) P064

Poster

*Recyclable Fluorene-Carbazole Copolymer for Highly Selective Dispersion of Semi-Conducting Single-Walled Carbon Nanotubes*

**Liang Xu**, Michal Valášek, Frank Hennrich, Marcel Mayor

19:00 - 21:00

(BoA p155) P066

Poster

*SWCNT Synthesis by Promoter-Assisted Floating Catalyst CVD*

**Qiang Zhang**, Esko Kauppinen

19:00 - 21:00

(BoA p156) P068

Poster

*Solid Catalyst Synthesis for Direct Growth of Chirality Controlled SWCNTs*

**Xiao Zhang**, Brian Graves, Adam Boies

19:00 - 21:00

(BoA p157) P070

Poster

*Length Selective Growth of Highly Pure Aligned Semiconducting Carbon Nanotubes*

**Zhenxing Zhu**, Nan Wei, Weijun Cheng, Silei Sun, Jun Gao, Rufan Zhang, Fei Wei

## Monday, 22 July 2019

## Electronics Symposium

19:00 - 21:00

(BoA p158) P072

Poster

*Efficient n-Doping of SWCNT Network Transistors***Jan Gotthardt**, Severin Schneider, Maximilian Brohmann, Roxana Lorenz, Eric Sauter, Michael Zharnikov, Hans-Jörg Himmel, Jana Zaumseil

19:00 - 21:00

(BoA p159) P074

Poster

*Dense Electrolyte-Gated Single-Walled Carbon Nanotube Networks as Artificial Synapses***Daniel Heimfarth**, Felix J. Berger, Sebastian Grieger, Marcel Rother, Jana Zaumseil

19:00 - 21:00

(BoA p160) P076

Poster

*Flexible, Lightweight Carbon Nanotube Sponge With High Performance Electromagnetic Interference Shielding***Dongmei Hu**, Qingwen Li

19:00 - 21:00

(BoA p161) P078

Poster

*Soft Aerogels Supported by ~1 Mass% Carbon Nanotubes for Thermal Interface Material***Satoru Kawakami**, Hisashi Sugime, Junichiro Shiomi, Suguru Noda

## Monday, 22 July 2019

## Energy Symposium

19:00 - 21:00

(BoA p162) P080

Poster

*The Solar-Thermal Characteristics of Anodic Aluminum Oxide for Solar Selective Absorber Applications***Tsung-Chieh Cheng**

19:00 - 21:00

(BoA p163) P082

Poster

*Covalent Assembly of Nanocarbon Frameworks for the Support of Catalyst/Sorbent Nanoparticles***Tommaso Costantini**, Milo Shaffer

19:00 - 21:00

(BoA p164) P084

Poster

*Versatile Manipulation of Nanostructured Noble Metal Aerogels for Electrocatalysis and Beyond***Ran Du**

19:00 - 21:00

(BoA p165) P086

Poster

*Nano-Engineering of a Hybrid Organic-Inorganic Composite Hole-Transporting Material and its Application in Perovskite Solar Cells***Teresa Gatti**

19:00 - 21:00

(BoA p166) P088

Poster

*Highly Heat-Resistant Battery Separator Based on Boron Nitride Nanotube***Kentaro Kaneko**, Keisuke Hori, Suguru Noda

Monday, 22 July 2019

Theory Symposium

19:00 - 21:00

(BoA p167) P090

Poster

*Mechanism of Ferrocene Decomposition and Fe Cluster Formation During Floating Catalyst Chemical Vapour Deposition***Ben McLean**, Alister Page

19:00 - 21:00

(BoA p168) P092

Poster

*Nucleation Mechanism of Boron Nitride Nanotubes During Ni-Catalysed Chemical Vapour Deposition***Ben McLean**, Alister Page, Grant Webber

19:00 - 21:00

(BoA p169) P094

Poster

*Metadynamics and DFTB: Free Energy Calculations Using Density Functional Tight Binding.***Izaac Mitchell**, Alister Page, Bálint Aradi

19:00 - 21:00

(BoA p170) P096

Poster

*Long Carbon Chains Observed in Ab Initio Molecular Dynamic Simulation of Carbon Nanotube Growth***Lu Qiu**, Feng Ding

19:00 - 21:00

(BoA p171) P098

Poster

*Necking of Carbon Nanotubes: a 1D Continuum Approach***Nicola Rizzi**, Ginevra Salerno, Alessandra Genoese, Andrea Genoese

19:00 - 21:00

(BoA p172) P100

Poster

*Molecular Dynamics Simulations for Nuclear Magnetic Relaxation Time of Water Encapsulated in a Carbon Nanotube***Kenji Sasaoka**, Takahiro Yamamoto

19:00 - 21:00

(BoA p173) P102

Poster

*Molecular Dynamics Simulation of Defect Generation by Irradiation of Platinum Particles on Graphite***Toshiki Sonoda**

19:00 - 21:00

(BoA p174) P104

Poster

*Computational Simulation of Cohesive Energy of CNT Bundles in the Water***Nanami Yamazaki**, Takahiro YamamotoMonday  
22 July 2019

Monday  
22 July 2019

# Program Tuesday

Tuesday  
23 July 2019

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## Plenary program

Franconia Hall

## Session PI3

Chair: Milo Schaffer

08:30 - 09:15

- K2 **Janina Maultzsch** (FAU Erlangen-Nürnberg)  
*Optical Spectroscopy of Low-Dimensional Semiconductors*

09:15 - 09:40

- I5 **Caterina Cocchi** (Humboldt-Universität zu Berlin)  
*Graphene Modulates the Optical Properties of Low-Dimensional Heterostructures*

09:40 - 10:05

- I6 **Shohei Chiashi** (University of Tokyo)  
*Water Adsorption and Desorption on Single and Suspended Single-Walled Carbon Nanotubes by Spectroscopy*

Coffee break

CCW Lobby

## Session PI4

Chair: Boris Yakobson

10:35 - 11:00

- I7 **Milo Shaffer** (Imperial College London)  
*Versatile and Scalable Approaches to Chemical Processing of Nanocarbons*

11:00 - 11:25

- I8 **Michael Strano** (MIT)  
*From Energy Harvesting to Living Plants - Concepts in Living and Synthetic Energy Conversion Enabled by Carbon Nanomaterials*

11:25 - 11:50

- C3 **Lei Shi** (Sun Yat-sen University)  
*Tailoring the Confined One-Dimensional Linear Carbon Chains*

11:50 - 12:15

- I9 **Qingwen Li** (Chinese Academy of Sciences)  
*Sorting and Aligning Single-Chirality Semiconducting Carbon Nanotubes*

Lunch break

Chair: Christoph Strunk

- 14:00 - 14:40 SEI7 **Edward Laird** (Lancaster University)  
*A Coherent Mechanical Oscillator Driven by Single-Electron Tunnelling*
- 14:40 - 15:00 SEI8 **Pertti Hakonen** (Aalto University)  
*Suspended Single-Walled Carbon Nanotubes for Optomechanics and Sensing*
- 15:00 - 15:20 SEI9 **Andreas K. Hüttel** (University of Regensburg)  
*Microwave Optomechanics With a Suspended Carbon Nanotube Quantum Dot*

10 minute break

Chair: Edward Laird

- 15:30 - 15:50 SEI10 **Yuval Yaish** (Technion)  
*Snap-Through Buckling Bi-Stability in Suspended Carbon Nanotube Resonators*
- 15:50 - 16:10 SEI11 **Lin Cong** (Tsinghua University)  
*Realization of the Mixing Excitation and the Coherent Electron-Phonon Coupling in Nanomechanical Resonators*
- 16:10 - 16:30 SEI12 **Alexis Descombin** (Université Lyon 1 ILM)  
*Tuning the Mechanical Q-Factor of SWCNT With External Voltage*

Coffee break

CCW Lobby



Chair: Sang Ouk Kim

- |               |      |                                                                                                                                           |
|---------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | SEn7 | <b>Fei Wei</b> (Tsinghua University)<br><i>Structure Control, Mass Production of Well Aligned Carbon Nanotubes for Energy Application</i> |
| 14:40 - 15:00 | SEn8 | <b>Christoph Brabec</b> (FAU Erlangen-Nürnberg)<br><i>TBA</i>                                                                             |
| 15:00 - 15:20 | SEn9 | <b>Esko I. Kauppinen</b> (Aalto University)<br><i>Dry Deposition of Nanocarbon Thin Films for Energy Applications</i>                     |

10 minute break

Chair: Fei Wei

- |               |       |                                                                                                                                      |
|---------------|-------|--------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SEn10 | <b>Sang Ouk Kim</b> (KAIST)<br><i>Graphene Oxide Liquid Crystal</i>                                                                  |
| 15:50 - 16:10 | SEn11 | <b>Chang Liu</b> (Chinese Academy of Sciences)<br><i>Single-Wall Carbon Nanotube Films and Their Hybrids for Energy Applications</i> |
| 16:10 - 16:30 | SEn12 | <b>Wei Lyu</b> (Tsinghua University)<br><i>Catalysis in Lithium-Sulfur Batteries</i>                                                 |

Coffee break

CCW Lobby

Tuesday  
23 July 2019

Chair: Alexander Hoegele

- |               |       |                                                                                                                                                                                                                                       |
|---------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | S2D7  | <b>Yoke Khin Yap</b> (Michigan Technological University)<br><i>Two-Dimensional Gold With Tunable Bandgaps</i>                                                                                                                         |
| 14:20 - 14:40 | S2D8  | <b>Catherine Journet</b> (Laboratoire des Multimatériaux et Interfaces)<br><i>New Atomic Layer Deposition (ALD) of Boron Nitride (BN) Based on Polymer Derived Ceramics Route: Potentiality for Complex Nanostructure Fabrication</i> |
| 14:40 - 15:00 | S2D9  | <b>Jinbo Pang</b> (University of Jinan)<br><i>Large Area Synthesis of Transition Metal Dichalcogenide for Non Linear Optics and Q Switched Laser Application</i>                                                                      |
| 15:00 - 15:20 | S2D10 | <b>Yang Wu</b> (Tsinghua University)<br><i>Effective Growth of Large Scale 2D Single Crystals With High Qualities</i>                                                                                                                 |

10 minute break

Chair: Xavier Marie

- |               |       |                                                                                                                                                                                                                         |
|---------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | S2D11 | <del><b>Uoman Khan</b> (Tsinghua University)</del> <b>CANCELED</b><br><i>Controlled Vapor-Solid Deposition of Millimeter-Size Single Crystal 2D Bi<sub>2</sub>O<sub>2</sub>Se for High Performance Phototransistors</i> |
| 15:50 - 16:10 | S2D12 | <b>Michael Heuken</b> (AIXTRON)<br><i>MOCVD Growth and Characterization of MoS<sub>2</sub> and WS<sub>2</sub></i>                                                                                                       |
| 16:10 - 16:30 | S2D13 | <b>Hyangsook Lee</b> (Samsung advanced Institute of Technology)<br><i>TEM Observation of Dynamic Structural Change in Synthetic MoS<sub>2</sub> Under Electron Beam Irradiation</i>                                     |

Coffee break

CCW Lobby

## Synthesis Symposium (SPFLD19)

Panorama 12

Chair: Ben Flavel

- |               |      |                                                                                                                                                                                            |
|---------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SSy1 | <b>Wim Wenseleers</b> (University of Antwerp)<br><i>Nanocarbon Structures Synthesized in the One-Dimensional Core of Carbon Nanotubes: Wavelength-Dependent Raman Spectroscopy</i>         |
| 14:20 - 14:40 | SSy1 | <b>Jeffrey Fagan</b> (National Institute of Standards and Technology)<br><i>Extending the Boundaries of Aqueous Two-Phase Extraction of Single-Wall Carbon Nanotubes Using Surfactants</i> |
| 14:40 - 15:00 | SSy2 | <b>Michael Arnold</b> (University of Wisconsin-Madison)<br><i>Bottom-Up Synthesis of Sub-5 Nm Armchair Graphene Nanoribbons via CVD</i>                                                    |
| 15:00 - 15:20 | SSy3 | <b>Etienne Gauffrès</b> (CNRS - Lab. Phot. Numérique et Nanosciences)<br><i>Optical Properties of Dyes Aggregated Into Carbon and Boron Nitride Nanotubes</i>                              |

10 minute break

Chair: Shigeo Maruyama

- |               |      |                                                                                                                                                                             |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SSy4 | <b>Robert Nißler</b> (Georg-August-Universität Göttingen)<br><i>Chirality Enriched Carbon Nanotubes With Tunable Wrapping via Corona Phase Exchange Purification (CPEP)</i> |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Spectroscopy Symposium (NSAP19)

Panorama 12

Chair: Leandro Malard

- |               |      |                                                                                                                             |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------|
| 15:50 - 16:30 | SSp1 | <b>Steven Doorn</b> (Los Alamos National Laboratory)<br><i>Harnessing Carbon Nanotube Defect States as Quantum Emitters</i> |
|---------------|------|-----------------------------------------------------------------------------------------------------------------------------|

Coffee break

CCW Lobby

Tuesday  
23 July 2019

## Theory Symposium (CCTN19)

Panorama 10

Chair: Christophe Bichara

- 14:00 - 14:20      STh1      **Alister Page** (University of Newcastle)  
*Etchants, Nucleation and Chirality Control During CVD Growth of CNTs: Insights From Molecular Simulation*
- 14:20 - 14:40      STh2      **Zhao Wang** (Guangxi University)  
*Chirality-Dependent Motion Transmission Between Aligned Carbon Nanotubes*
- 14:40 - 15:00      STh2      **James Elliott** (University of Cambridge)  
*Dynamics of CNT Aerogel Formation: a Hybrid Langevin and Molecular Dynamics Approach*
- 15:00 - 15:20      STh3      **Benedetta Flebus** (University of California LA)  
*Tuning Electronic Properties of Carbon Nanotubes by Graphene Proximity*

10 minute break

Chair: Deborah Prezzi

- 15:30 - 15:50      STh4      **Ksenia V. Bets** (Rice University)  
*Carbon Nanotube–Catalyst Interface Segregation and the Quest for Chirality Control*

## NanoBio Symposium (CNBMT19)

Panorama 10

Chair: Ardemis Boghossian

- 15:50 - 16:30      SNB1      **Michael S. Strano** (MIT)  
*Applications of Carbon Nanosensors to Understanding Biochemical Signaling Within the Human Body*

Coffee break

CCW Lobby

## Poster Sessions

CCW Lobby Level

17:00 - 18:30

Poster Session 3 (odd poster numbers)

19:00 - 21:00

Poster Session 4 (even poster numbers)

## Overview of Tuesday's oral presentations

Tuesday, 23 July 2019

Plenary Venue

08:30 - 09:15

(BoA p186) Franconia Hall

K2 (Keynote)

*Optical Spectroscopy of Low-Dimensional Semiconductors*

**Janina Maultzsch**

09:15 - 09:40

(BoA p187) Franconia Hall

I5 (Invited)

*Graphene Modulates the Optical Properties of Low-Dimensional Heterostructures*

**Caterina Cocchi**

09:40 - 10:05

(BoA p188) Franconia Hall

I6 (Invited)

*Water Adsorption and Desorption on Single and Suspended Single-Walled Carbon Nanotubes by Spectroscopy*

**Shohei Chiashi**, Yoshikazu Homma

10:35 - 11:00

(BoA p189) Franconia Hall

I7 (Invited)

*Versatile and Scalable Approaches to Chemical Processing of Nanocarbons*

**Milo Shaffer**

11:00 - 11:25

(BoA p190) Franconia Hall

I8 (Invited)

*From Energy Harvesting to Living Plants - Concepts in Living and Synthetic Energy Conversion Enabled by Carbon Nanomaterials*

**Michael Strano**

11:25 - 11:50

(BoA p191) Franconia Hall

C3 (Contributed)

*Tailoring the Confined One-Dimensional Linear Carbon Chains*

**Lei Shi**, Sofie Cambré, Wim Wenseleers, Ryosuke Senga, Kazu Suenaga, Takeshi Saito, Alejandro Pérez Paz, Angel Rubio, Paola Ayala, Thomas Pichler

11:50 - 12:15

(BoA p192) Franconia Hall

I9 (Invited)

*Sorting and Aligning Single-Chirality Semiconducting Carbon Nanotubes*

**Qingwen Li**, Bing Gao, Song Qiu, Zhengxia Lv, Hehua Jin

Tuesday, 23 July 2019

Electronics Symposium

14:00 - 14:40

(BoA p193) Panorama 11

SEI7 (Overview)

*a Coherent Mechanical Oscillator Driven by Single-Electron Tunnelling*

**Edward Laird**

14:40 - 15:00

(BoA p194) Panorama 11

SEI8 (Invited)

*Suspended Single-Walled Carbon Nanotubes for Optomechanics and Sensing*

**Pertti Hakonen**, Kaikkonen Jukka-Pekka, T.S. Abhilash, Marco Will, Igor Todoshchenko, Masahiro Kamada

**15:00 - 15:20** (BoA p195) **Panorama 11**

SEI9 (Invited)

*Microwave Optomechanics With a Suspended Carbon Nanotube Quantum Dot*

**Andreas K. Hüttel**

**15:30 - 15:50**

(BoA p196) **Panorama 11**

SEI10 (Invited)

*Snap-Through Buckling Bi-Stability in Suspended Carbon Nanotube Resonators*

**Yuval Yaish**, Tal Tabachnik, Sharon Rechnitz, Michael Shlafman, Shlomo Shlafman

**15:50 - 16:10**

(BoA p197) **Panorama 11**

SEI11 (Contributed)

*Realization of the Mixing Excitation and the Coherent Electron-Phonon Coupling in Nanomechanical Resonators*

**Lin Cong**, Xinhe Wang, Dong Zhu, Jiangtao Wang, Guoping Guo, Wenjie Liang, Kaili Jiang

**16:10 - 16:30**

(BoA p198) **Panorama 11**

SEI12 (Contributed)

*Tuning the Mechanical Q-Factor of SWCNT With External Voltage*

**Alexis Descombin**, Philippe Poncharal, Alina Pascale-Hamri, May Choueib, Rozenn Diehl, Pascal Vincent, Steve T. Purcell, Anthony Ayari, Sorin Perisanu

**Tuesday, 23 July 2019**

**Energy Symposium**

**14:00 - 14:40**

(BoA p199) **Franconia Hall**

SEn7 (Overview)

*Structure Control, Mass Production of Well Aligned Carbon Nanotubes for Energy Application*

**Fei Wei**

**14:40 - 15:00**

(BoA p200) **Franconia Hall**

SEn8 (Invited)

TBA

**Christoph Brabec**

**15:00 - 15:20**

(BoA p201) **Franconia Hall**

SEn9 (Invited)

*Dry Deposition of Nanocarbon Thin Films for Energy Applications*

**Esko Kaupinnen**

**15:30 - 15:50**

(BoA p202) **Franconia Hall**

SEn10 (Invited)

*Graphene Oxide Liquid Crystal*

**Sang Ouk Kim**

**15:50 - 16:10**

(BoA p203) **Franconia Hall**

SEn11 (Invited)

*Single-Wall Carbon Nanotube Films and Their Hybrids for Energy Applications*

**Chang Liu**

**16:10 - 16:30**

(BoA p204) **Franconia Hall**

SEn12 (Invited)

*Catalysis in Lithium-Sulfur Batteries*

**Wei Lyu**, Quan-Hong Yang

## Tuesday, 23 July 2019

## 2D Materials Symposium

14:00 - 14:20

(BoA p205) Panorama 13

S2D7 (Contributed)

*Two-Dimensional Gold With Tunable Bandgaps***Yoke Khin Yap**, Shiva Bhandari, Boyi Hao, Kevin Waters, Chee Huei Lee, Juan-Carlos Idrobo, Dongyan Zhang, Ravindra Pandey

14:20 - 14:40

(BoA p206) Panorama 13

S2D8 (Contributed)

*New Atomic Layer Deposition (ALD) of Boron Nitride (BN) Based on Polymer Derived Ceramics Route: Potentiality for Complex Nanostructure Fabrication***Catherine Journet**, Wenjun Hao, Catherine Marichy, Arnaud Brioude

14:40 - 15:00

(BoA p207) Panorama 13

S2D9 (Contributed)

*Large Area Synthesis of Transition Metal Dichalcogenide for Non Linear Optics and Q Switched Laser Application***Jinbo Pang**, Qilin Cheng, Hong Liu

15:00 - 15:20

(BoA p208) Panorama 13

S2D10 (Contributed)

*Effective Growth of Large Scale 2D Single Crystals With High Qualities***Yang Wu**

16:10 - 16:30

(BoA p209) Panorama 13

S2D11 (Contributed)

*Controlled Vapor-Solid Deposition of Millimeter-Size Single Crystal 2D Bi<sub>2</sub>O<sub>2</sub>Se for High Performance Phototransistors***Usman Khan**, Yuting Luo, Lei Tang, Changjiu Teng, Jiaman Liu, Bilu Liu, Hui-Ming Cheng

15:30 - 15:50

(BoA p210) Panorama 13

S2D12 (Contributed)

*MOCVD Growth and Characterization of MoS<sub>2</sub> and WS<sub>2</sub>***Michael Heuken**, Dominik Andrzejewski, Henrik Myja, Tillmar Kümmell, Gerd Bacher, Annika Grundmann, Holger Kalisch, Andrei Vescan

15:50 - 16:10

(BoA p211) Panorama 13

S2D13 (Contributed)

*TEM Observation of Dynamic Structural Change in Synthetic MoS<sub>2</sub> Under Electron Beam Irradiation***Hyangsook Lee**, Yeonchoo Cho, Wonsik Ahn, Eunha Lee, Hyoungsub Kim

## Tuesday, 23 July 2019

## Synthesis Symposium

14:00 - 14:20

(BoA p212) Panorama 12

SSy8 (Invited)

*Nanocarbon Structures Synthesized in the One-Dimensional Core of Carbon Nanotubes: Wavelength-Dependent Raman Spectroscopy***Wim Wenseleers**, Miles Martinati, Sofie Cambré, Hans Kuzmany, Lei Shi, Philip Rohringer, Paola Ayala, Thomas Pichler

14:20 - 14:40

(BoA p213) Panorama 12

SSy9 (Invited)

*Extending the Boundaries of Aqueous Two-Phase Extraction of Single-Wall Carbon Nanotubes Using Surfactants***Jeffrey Fagan**



**14:40 - 15:00****(BoA p214) Panorama 12**

SSy10 (Invited)

*Bottom-Up Synthesis of Sub-5 Nm Armchair Graphene Nanoribbons via CVD***Michael Arnold****15:00 - 15:20****(BoA p215) Panorama 12**

SSy11 (Invited)

*Optical Properties of Dyes Aggregated Into Carbon and Boron Nitride Nanotubes***Etienne Gauffrès**, Charlotte Allard, Raffaella Nascimento, Frederic Fossard, Leonard Schué, Emmanuel Flahaut, Annick Loiseau, Patrick Desjardins, Richard Martel**15:30 - 15:50****(BoA p216) Panorama 12**

SSy12 (Contributed)

*Chirality Enriched Carbon Nanotubes With Tunable Wrapping via Corona Phase Exchange Purification (CPEP)***Robert Nißler**, Florian A. Mann, Niklas Herrmann, Helen Preiß, Sebastian Kruss

Tuesday, 23 July 2019

Spectroscopy Symposium

**15:50 - 16:30****(BoA p217) Panorama 12**

SSp1 (Overview)

*Harnessing Carbon Nanotube Defect States as Quantum Emitters***Stephen Doorn**, Sehmus Ozden, Xiaowei He, Yue Luo, Stefan Strauf, Jeffrey Blackburn, Younghee Kim, Han Htoon

Tuesday, 23 July 2019

Theory Symposium

**14:00 - 14:20****(BoA p218) Panorama 10**

STh7 (Invited)

*Etchants, Nucleation and Chirality Control During CVD Growth of CNTs: Insights From Molecular Simulation***Alister Page****14:20 - 14:40****(BoA p219) Panorama 10**

STh8 (Contributed)

*Chirality-Dependent Motion Transmission Between Aligned Carbon Nanotubes***Zhao Wang****14:40 - 15:00****(BoA p220) Panorama 10**

STh9 (Invited)

*Dynamics of CNT Aerogel Formation: a Hybrid Langevin and Molecular Dynamics Approach***James Elliott**, Philipp Kloza, Mabel Chao, Nicholas Kateris, Hoecker Christian, Adam Boies**15:00 - 15:20****(BoA p221) Panorama 10**

STh10 (Invited)

*Tuning Electronic Properties of Carbon Nanotubes by Graphene Proximity***Benedetta Flebus**

15:30 - 15:50

(BoA p222) Panorama 10

*STh11 (Contributed) Carbon Nanotube–Catalyst Interface Segregation and the Quest for Chirality Control*

**Ksenia V. Bets**, Evgeni S. Penev, Boris I. Yakobson

Tuesday, 23 July 2019

NanoBio Symposium

15:50 - 16:30

(BoA p223) Panorama 10

*SNB1 (Overview) Applications of Carbon Nanosensors to Understanding Biochemical Signaling Within the Human Body*

**Michael S. Strano**

## Overview of Tuesday's poster presentations

Tuesday, 23 July 2019

Plenary Venue

17:00 - 18:30

(BoA p226) P001

*Poster Lattice Models To Study Chirality Selective Growth of SWNTs*

**Christophe Bichara**

17:00 - 18:30

(BoA p227) P003

*Poster One-Dimensional Thermoelectric Properties of High-Purity Single-Chirality Single-Wall Carbon Nanotube Films*

**Yota Ichinose**, Kengo Fukuhara, Akari Yoshida, Yohei Yomogida, Takahiro Yamamoto, Junichiro Kono, Kazuhiro Yanagi

17:00 - 18:30

(BoA p228) P005

*Poster Substituting Silicon in Graphene and Carbon Nanotubes Through Intermittent Vacancies*

**Heena Inani**, Kimmo Mustonen, Alexander Markevich, Erxiong Ding, Mukesh Tripathi, Aqeel Hussain, Clemens Mangler, Esko I. Kauppinen, Toma Susi, Jani Kotakoski

17:00 - 18:30

(BoA p229) P007

*Poster Growth Process of Individual Single-Walled Carbon Nanotubes Analyzed by Isotope Labelling*

**Taiki Inoue**, Bunsho Koyano, Shun Yamamoto, Shota Hiraoka, Keigo Otsuka, Rong Xiang, Shohei Chiashi, Shigeo Maruyama

17:00 - 18:30

(BoA p230) P009

*Poster Simple Separation of Carbon Nanotubes*

**Dawid Janas**, Blazej Podlesny, Edyta Turek

17:00 - 18:30

(BoA p232) P013

*Poster Ohmic and Voltage-Activated Transport of Ions Through Single-Walled Carbon Nanotubes*

**Vincent Jourdain**, Khadija Yazda, Saïd Tahir, Thierry Michel, Bastien Loubet, Manoel Manghi, Jeremy Bentin, Fabien Picaud, John Palmeri, Mohamed el Amine Kribeche, Jin Cui, Adrien Noury, François Henn

17:00 - 18:30

(BoA p233) P015

Poster

*Targeted Tuning of Optoelectronic Properties of Single-Walled Carbon Nanotube Films*

**Eldar Khabushev**, Dmitry Krasnikov, Yulia Kolodyaznaya, Alexey Tsapenko, Orisia Zaremba, Anastasia Goldt, Albert Nasibulin

17:00 - 18:30

(BoA p234) P017

Poster

*Toward Fabrication of Hybrid Perovskite – Semiconducting Single-Walled Carbon Nanotube (S-SWNT) Systems*

**Simon Kießling**, Pascal Kunkel, Friedrich Schöppler, Tobias Hertel

17:00 - 18:30

(BoA p235) P019

Poster

*Reference Material for N<sub>2</sub> Adsorption to Carbon Nanotubes*

**Kazufumi Kobashi**, Hideaki Nakajima, Takahiro Morimoto, Toshiya Okazaki

17:00 - 18:30

(BoA p236) P021

Poster

*One-Pot Extraction of Semiconducting Single-Walled Carbon Nanotubes With a Thermoresponsive Polymer*

**Shota Kuwahara**, Eriko Shimura, Toshiki Sugai

17:00 - 18:30

(BoA p237) P023

Poster

*Environment Effects on the Charge States of Metallic and Semiconducting SWCNTs During Their Separation by the ELF Method*

**Yuki Kuwahara**, Takeshi Saito

17:00 - 18:30

(BoA p238) P025

Poster

*A Systematic Study of CO<sub>2</sub>-Assisted Growth of Single-Walled Carbon Nanotubes*

**Yongping Liao**, Aqeel Hussain, Nan Wei, Qiang Zhang, Hua Jiang, Saeed Ahmad, Er-Xiong Ding, Esko I. Kauppinen

17:00 - 18:30

(BoA p239) P027

Poster

*Preparation of High-Concentration Carbon Nanotube Dispersion for High-Throughput Production of Multiple Single-Chirality Species*

**Huaping Liu**, Dehua Yang, Wei Su, Xiaojun Wei, Weiya Zhou, Fei Wei, Hiromichi Kataura, Sishen Xie

17:00 - 18:30

(BoA p240) P029

Poster

*Developing Strong and Tough Carbon Nanotube Films by Proper Dispersing Strategy and Enhanced Interfacial Interactions*

**Weibang Lyu**, Shuxuan Qu, Wenbing Gong, Qingwen Li, Xinrong Jiang

17:00 - 18:30

(BoA p241) P031

Poster

*Surface Protection of Austenitic Steels by Carbon Nanotube Coatings*

**Timothy MacLucas**

17:00 - 18:30

(BoA p242) P033

Poster

*Unique Features of Carbon Nanotubes: Shaping Electron Wave Functions With Parallel Magnetic Field*

**Magdalena Marganska**, Daniel Schmid, Alois Dirnaichner, Peter Stiller, Christoph Strunk, Milena Grifoni, Andreas Hüttel

17:00 - 18:30

(BoA p243) P035

Poster

*Synthesis of Boron Nitride Wrapped Vertically-Aligned Single-Walled Carbon Nanotubes and Boron Nitride Nanotubes Array*

**Ming Liu**, Yongjia Zheng, Taiki Inoue, Shohei Chiashi, Rong Xiang, Shigeo Maruyama

Tuesday, 23 July 2019

2D Materials Symposium

17:00 - 18:30

(BoA p244) P037

Poster

*High Yield Growth and Doping of Black Phosphorus With Tunable Electronic Properties for Ultrasensitive Molecule Sensing*

**Mingqiang Liu**

Tuesday, 23 July 2019

Electronics Symposium

17:00 - 18:30

(BoA p245) P039

Poster

*Metal Fibrils Embedded in Continuous Carbon Nanotube Fibers With High Current-Carrying Capacity*

**Dong Su Lee**, Hokyun Lee, Min Park, Junbeom Park, Jiyeon Han, Aram Lee, Sukang Bae, Tae-Wook Kim, Seung Min Kim, Jun-Seok Ha, Sang Hyun Lee

17:00 - 18:30

(BoA p246) P041

Poster

*High-Yield Fabrication, Activation, and Characterization of Carbon Nanotube Ion Channels by Repeated Voltage-Ramping of Membrane-Capillary Assembly*

**Hyegi Min**, Yun-Tae Kim, Seung Min Moon, Jae-Hee Han, Kyungsuk Yum, Chang Young Lee

17:00 - 18:30

(BoA p247) P043

Poster

*Directed Supramolecular Assembly of SWCNTs for Functional Networks*

**Chris Roberts**, Hin Chun Yau, Milo Shaffer

17:00 - 18:30

(BoA p248) P045

Poster

*Solid-State Integrated Capacitors Based on Carbon Nanofibers*

**Muhammad Amin Saleem**, R. Andersson, M. Bylund, M. S. Kabir, V. Desmaris

17:00 - 18:30

(BoA p249) P047

Poster

*Autonomous Spatial Organization in Carbon Nanotubes for Tunable Optoelectronic Materials*

**Gustavo A. Zelada-Guillen**, Martha V. Escarcega-Bobadilla

Tuesday, 23 July 2019  
Symposium

17:00 - 18:30

(BoA p251) P051

Poster

*Towards Single-Walled Carbon Nanotube Based Sustainable Electrocatalysts for Hydrogen Economy*

**Tanja Kallio**, Farhan Ali, Taneli Rajala, Albert Nasibulin

17:00 - 18:30

(BoA p253) P055

Poster

*Interwoven Carbon Nanotubes for Supercapacitive Wearable Energy Storage Devices*

**Mihir Kumar Jha**, Kenji Hata, Chandramouli Subramaniam

17:00 - 18:30

(BoA p254) P057

Poster

*Morphology and Surface Chemistry Engineering Toward pH-Universal Catalysts for Hydrogen Evolution at High Current Density*

**Yuting Luo**

17:00 - 18:30

(BoA p255) P059

Poster

*Vertically Aligned Carbon Nanotube Based Materials: Towards Supercapacitor Devices With Tunable Performances*

**Martine Mayne-L'Hermite**, Fabien Nassoy, Thomas Vignal, Cédric Desgranges, Jérémie Descarpentries, Léa Darchy, Aurélien Boisset, Mathieu Pinault, Cécile Reynaud, Philippe Banet, Pierre-Henri Aubert, Fouad Ghamouss, François Tran-Van

17:00 - 18:30

(BoA p256) P061

Poster

*Thorn-Shaped Pt-Ni Hierarchical Electrodes for High Performance Hydrogen Evolution Reaction*

**Adeela Nairan**, Cheng Yang

17:00 - 18:30

(BoA p257) P063

Poster

*Thermoelectric Materials and Devices Based on Molecularly Doped Carbon Nanotube Films*

**Yoshiyuki Nonoguchi**, Tsuyoshi Kawai

17:00 - 18:30

(BoA p258) P065

Poster

*Ultra-Lightweight, Robust and Amphiphobic Carbon Nanotube Foams With Excellent Buoyancy*

**Pei Cao**, Zhao Liming, Zhang Yongyi, Li Qingwen

Tuesday, 23 July 2019

Spectroscopy Symposium

17:00 - 18:30

(BoA p259) P067

Poster

*Spinning-Disc Confocal Microscopy in the Second Near-Infrared Window (NIR-II)*

**Alessandra Antonucci**, Nils Schuergers, Benjamin Lambert, Andrea Latini, Raino Ceccarelli, Andrea Santinelli, Andrii Rogov, Daniel Ciepielewski, Ardemis Boghossian

17:00 - 18:30

(BoA p260) P069

Poster

*Doping-Dependent Energy Transfer From Conjugated Polyelectrolytes to (6,5) Single-Walled Carbon Nanotubes*

**Merve Balci Leinen**, Felix Berger, Patrick Klein, Markus Mühlinghaus, Nicolas Zorn, Simon Settele, Sybille Allard, Ullrich Scherf, Jana Zaumseil

17:00 - 18:30

(BoA p261) P071

Poster

*Optical Response of Finite-Thickness Plasmonic Films With Periodic Cylindrical Anisotropy*

**Igor Bondarev**

17:00 - 18:30

(BoA p262) P073

Poster

*Using Alkaline Oxidation To Prepare Commercial Carbon Materials for Elemental Analysis*

**Pedro Costa**, Filipa Simoes, Jan Kamenik, Jan Kucera

17:00 - 18:30

(BoA p263) P075

Poster

*Charge Carrier Localization in Doped Carbon Nanotubes Revealed by Linear and Nonlinear Spectroscopy*

**Klaus Eckstein**, Pascal Kunkel, Larry Lüer, Tobias Hertel

17:00 - 18:30

(BoA p264) P077

Poster

*Characterisation of the Inner Shell Extraction From Double-Wall Carbon Nanotubes by in Situ Raman PLE Spectroscopy After Ultracentrifugation.*

**Maksim Erkens**, Sofie Cambré, Emmanuel Flahaut, Wim Wenseleers

17:00 - 18:30

(BoA p265) P079

Poster

*Charge Transfer Process at the Interface of Carbon Nanotube/WS<sub>2</sub> Mixed Dimensional Heterostructures*

**Rui Feng**

17:00 - 18:30

(BoA p266) P081

Poster

*Ultrafast Microscopy and Spectroscopy of Graphene*

**Achim Hartschuh**, Veit Giegold, Lucas Lange, Richard Ciesielski

17:00 - 18:30

(BoA p267) P083

Poster

*Highly Sensitive Surface-Enhanced Raman Spectroscopy Substrate With Nanometer-Scale Quasi-Periodic Nanostructures*

**Yuanhao Jin**, Qunqing Li, Shoushan Fan

Tuesday, 23 July 2019

NanoBio Symposium

17:00 - 18:30

(BoA p268) P085

Poster

*Near-Infrared Confocal Imaging of Single-Walled Carbon Nanotube Uptake in Bacterial Cells*

**Alessandra Antonucci**, Nils Schuergers, Vitalijs Zubkovs, Ardemis Boghossian

17:00 - 18:30

(BoA p269) P087

Poster

*A Nanobioengineering Frontier for Next-Generation Optical Devices***Ardemis Boghossian**

17:00 - 18:30

(BoA p270) P089

Poster

*Application of Carbon Nanotubes Based Drug Carriers in Biomedical Field***Cheng-hua Ding**, Yue Sun, Hua-ping Pan

17:00 - 18:30

(BoA p271) P091

Poster

*A Highly Selective Array of Sensors Based on NPs-Decorated CNT for Medical Applications***Sonia Freddi**, Stefania Pagliara, Giovanni Drera, Andrea Goldoni, Luigi Sangaletti

17:00 - 18:30

(BoA p272) P093

Poster

*The Impact of Exposed Surface Area on the Response of SWCNT Optical Sensors***Shang-Jung Wu**, Alics Judith Gillen, Daniel Jerome Siefman, Claire Bourmaud, Benjamin Lambert, Ardemis Boghossian

17:00 - 18:30

(BoA p273) P095

Poster

*Salt Micro/Nanolenses Formed by Ionic Transport for Optical Visualization of Carbon Nanotubes and Enhanced Raman Spectroscopy***Yun-Tae Kim**, Hyegi Min, Michael Strano, Jae-Hee Han, Chang Young Lee

17:00 - 18:30

(BoA p274) P097

Poster

*Macrophage Behavior on the Titanium Electrodeposited Carbon Nanohorn***Sadahito Kimura**, Eri Hirata, Sari Takada, Masatoshi Sakairi, Masako Yudasaka, Atsuro Yokoyama

Tuesday, 23 July 2019

Plenary Venue

19:00 - 21:00

(BoA p275) P002

Poster

*Wavelength-Dependent Resonant Raman Spectroscopy of Graphene Nanoribbons Synthesized Inside Carbon Nanotubes***Miles Martinati**, Sofie Cambré, Wim Wenseleers, Hans Kuzmany, Lei Shi, Thomas Pichler, Jenő Kürti, János Koltai, Gergő Kukucska, Kecheng Cao, Ute Kaiser Kaiser, Takeshi Saito

19:00 - 21:00

(BoA p276) P004

Poster

*Field-Induced Carrier Injection in TMDC Heterostructures***Mina Maruyama**, Susumu Okada

19:00 - 21:00

(BoA p277) P006

Poster

*Synthesis of Vertically-Aligned Single-Walled Carbon Nanotubes Having Small Diameters by ACCVD Using Ir Catalysts***Takahiro Maruyama**, Takuya Okada, Kamal Sharma, Tomoko Suzuki, Takahiro Saida, Shigeya Naritsuka

19:00 - 21:00

(BoA p278) P008

Poster

*Analysis of Reaction Products in CNT Growth Process by CVD***Hideki Masuda**, Yu Kikuchi, Kanade Matsuo, Toshihiko Fujimori, Takeshi Hikata, Soichiro Okubo, Yoshikazu Ito, Jun-ichi Fujita

19:00 - 21:00

(BoA p279) P010

Poster

*Flexible Free-Standing-Mode Triboelectric Generator Realized by Surface Modification***Masahiro Matsunaga**, Jun Hirotsu, Shigeru Kishimoto, Yutaka Ohno

19:00 - 21:00

(BoA p280) P012

Poster

*Over 40 GPa of Breaking Limit Stress With Long and Highly Crystalline CNTs***Kanade Matsuo**, Yu Kikuchi, Kentaro Watanabe, Hideki Masuda, Toshihiko Fujimori, Takeshi Hikata, Soichiro Okubo, Yoshikazu Ito, Jun-ichi Fujita

19:00 - 21:00

(BoA p281) P014

Poster

*The Effects of Hydrogen Chemical Potential on the Graphene Precursors During Transition Metal Graphene CVD.***Izaak Mitchell**, Alister Page

19:00 - 21:00

(BoA p282) P016

Poster

*Nanotube Functionalisation for Improved Nanocomposite Fibers***Joseph Moore**

19:00 - 21:00

(BoA p283) P018

Poster

*Mechanical and Electrical Structures of Nano-Carbon Materials Imaged by Lock-in Thermography***Takahiro Morimoto**, Hideaki Nakajima, Toshiya Okazaki

19:00 - 21:00

(BoA p284) P020

Poster

*Analysis of the Resistance Switching Properties in the Multi-Stacking Composed of Pt/Graphene Oxide/Ag<sub>2</sub>S/Ag***Ryota Negishi**

19:00 - 21:00

(BoA p285) P022

Poster

*Synthesis of Highly Crystalline Multilayer Graphene From Defective Graphene Oxide Materials***Ryota Negishi**, Yuriko Tadano, Yuta Nishina, Masashi Akabori, Yoshihiro Kobayashi

19:00 - 21:00

(BoA p286) P024

Poster

*Local Strain Suppression Layer for Low-Voltage Operable, Robust, and Stretchable Carbon Nanotube Integrated Circuits***Yuya Nishio**, Taiga Kashima, Jun Hirotsu, Shigeru Kishimoto, Yutaka Ohno

19:00 - 21:00

(BoA p287) P026

Poster

*Ab Initio Study of Surfactant and Water Molecules on Defective Single-Wall Carbon Nanotubes***Mari Ohfuchi**



19:00 - 21:00

(BoA p288) P028

Poster

*Carrier Accumulation in Graphene/hBN Heterostructures Under an External Electric Field***Susumu Okada**

19:00 - 21:00

(BoA p289) P030

Poster

*Defective Carbon Nanotubes: Conductance Loss and Enhanced Piezoresistivity***Jörg Schuster**, Fabian Teichert

19:00 - 21:00

(BoA p290) P032

Poster

*Li-Endohedral Fullerenes on Top of Laminated Carbon Nanotube Electrode-Based Perovskite Solar Cells Induce Exceptional Stability***Ahmed Shawky**, Il Jeon, Esko Kauppinen, Shigeo Maruyama, Yutaka Matsuo

Tuesday, 23 July 2019

2D Materials Symposium

19:00 - 21:00

(BoA p291) P034

Poster

*DFT-1/2 Approximate Quasiparticle Corrections on Band Gap Calculation of 2D Materials***Lara Kühl Teles**, Ivan Guilhon, Daniel Schwalbe Koda, Marcelo Marques, Luiz Guimarães Ferreira

19:00 - 21:00

(BoA p292) P036

Poster

*Ethanol Sensing With Surface-Mounted Metal-Organic-Framework Functionalized Graphene Transistors***Sandeep Kumar**, Kai Müller, Simone Dehm, Manuel Rommel, Tobias Schlöder, Artem Fediai, Qiang Zhang, Wolfgang Wenzel, Christof Wöll, Lars Heinke, Ralph Krupke

19:00 - 21:00

(BoA p293) P038

Poster

*Large Intravalley Scattering Due to Pseudo-Magnetic Fields in Crumpled Graphene***Péter Kun**, Gergő Kukucska, Gergely Dobrik, János Koltai, Jenő Kürti, László Péter Biró, Levente Tapasztó, Péter Nemes-Incze

19:00 - 21:00

(BoA p294) P040

Poster

*Chemical Interaction of Sapphire Substrate With  $\text{HfCl}_4$  During Chemical Vapor Deposition of  $\text{HfS}_2$* **Mirine Leem**, Hyangsook Lee, Wonsik Ahn, Taejin Park, Hoijoon Kim, Hyounsub Kim

19:00 - 21:00

(BoA p295) P042

Poster

*Impact of Temperature and Excitation Laser Power on the Raman Spectra of Chemically Functionalized  $\text{MoS}_2$* **Narine Moses Badlyan**, Wanzheng Zhang, Kathrin Knirsch, Andreas Hirsch, Janina Maultzsch

19:00 - 21:00

(BoA p296) P044

Poster

*Anomalous Electrical Transport Properties of Multilayer Graphene With Turbostratic Stacking***Ryota Negishi**, Chaopeng Wei, Yui Ogawa, Masashi Akabori, Yoshitaka Taniyasu, Yasushi Kanai, Kazuhiko Matsumoto, Yoshihiro Kobayashi

Tuesday, 23 July 2019

Spectroscopy Symposium

19:00 - 21:00

(BoA p297) P046

Poster

*Structural Characterization of Defects in Hexagonal Boron Nitride Using Scanning Probe Spectroscopy***Volodymyr Koman**, Daichi Kozawa, Ananth Govind Rajan, Michael Strano

19:00 - 21:00

(BoA p298) P048

Poster

*Intertube Energy Transfer in Dilute SWNT-Polymer Matrices***Pascal Kunkel**, Tobias Hertel

19:00 - 21:00

(BoA p299) P050

Poster

*Controlling Photon Antibunching From 1D Emitters Using Optical Antennas***Lucas Lange**, Frank Schäfer, Alexander Biewald, Richard Ciesielski, Achim Hartschuh

19:00 - 21:00

(BoA p300) P052

Poster

*2D Raman Bands in Chirality-Defined Individual Double-Walled Carbon Nanotubes*Dmitry Levshov, Raul Arenal, Wim Wenseleers, Sofie Cambré, Jean-Louis Sauvajol, **Matthieu Paillet**

19:00 - 21:00

(BoA p301) P054

Poster

*Reabsorption Effect Observed in Raman Spectra of Single-Chirality Single-Wall Carbon Nanotubes***Shilong Li**, Dehua Yang, Jiaming Cui, Xiaojun Wei, Weiya Zhou, Sishen Xie, Hiromichi Kataura, Huaping Liu

19:00 - 21:00

(BoA p302) P056

Poster

*Detecting Energy Transfer Among Highly Suspended Carbon Nanotubes in Aqueous Solution by Photoluminescence***Shilong Li**, Dehua Dehua, Jiaming Cui, Xiaojun Wei, Weiya Zhou, Sishen Xie, Hiromichi Kataura, Huaping Liu

19:00 - 21:00

(BoA p303) P058

Poster

*Exciton-Polariton Relaxation in Single-Walled Carbon Nanotube Networks***Jan Lüttgens**, Arko Graf, Jana Zaumseil

19:00 - 21:00

(BoA p304) P060

Poster

*Emission Enhancement of Carbon Nanotubes Using Nanobeam Cavities***Hidegori Machiya**, Takushi Uda, Akihiro Ishii, Yuichiro K. Kato

19:00 - 21:00

(BoA p305) P062

Poster

*Thermal Exciton Radiation of Single-Walled Carbon Nanotubes***Yuhei Miyauchi**, Taishi Nishihara, Akira Takakura, Kenichiro Itami

19:00 - 21:00

(BoA p306) P064

Poster

*Identification of CNT Species Populations in TGA Peaks***Jenifer Mizen**, John Bulmer, Thurid Gspann, Adarsh Kaniyoor, James Elliott

19:00 - 21:00

(BoA p307) P066

Poster

*Fermi-Level Dependence of THz High-Harmonic Generation in Single-Wall Carbon Nanotubes***Hiroyuki Nishidome**, Kohei Nagai, Kento Uchida, Yota Ichinose, Kengo Fukuhara, Junji Nozaki, Junko Eda, Yohei Yomogida, Junichiro Kono, Koichiro Tanaka, Kazuhiro Yanagi

19:00 - 21:00

(BoA p308) P068

Poster

*Ultrafast Non-Linear 2D Microspectroscopy Reveals Coherent Phonon-Mediated Intra- and Intervalley Exciton Interaction in an Individual SWCNT***Matthias Nuß**, Kerstin Müller, Donghai Li, Friedrich Schöppler, Tobias Hertel, Tobias Brixner

19:00 - 21:00

(BoA p309) P070

Poster

*Photon Correlation Spectroscopy of Alky Defect States in Carbon Nanotubes***Manuel Nutz**, Hyejin Kwon, Mijin Kim, YuHuang Wang, Alexander Högele

19:00 - 21:00

(BoA p310) P072

Poster

*Super-Resolution Imaging of Air-Suspended Carbon Nanotubes by Extracting Nonlinear Excitonic Processes***Keigo Otsuka**, Akihiro Ishii, Yuichiro K. Kato

19:00 - 21:00

(BoA p311) P074

Poster

*Electroluminescence From Aryl-Functionalized Monochiral Carbon Nanotubes With Deep Exciton Traps***Adnan Riaz**, Marco Gaulke, Felix Pyatkov, Avishek Saha, Simone Dhem, Han Htoon, Stephen Doorn, Ralph Krupke

19:00 - 21:00

(BoA p312) P076

Poster

*Quantification of Atmospheric and Chemically Induced P-Doping in Carbon Nanotubes by Electron Paramagnetic Resonance***Andreas Sperlich**, Michael Auth, Florian Oberndorfer, Klaus Eckstein, Bernd Sturza, Vladimir Dyakonov, Tobias Hertel

19:00 - 21:00

(BoA p313) P078

Poster

*Defects Enable Dark Exciton Photoluminescence With Increased Lifetimes***Trevor Tumiel**, Amanda Amori, Zhentao Hou, Todd Krauss

19:00 - 21:00

(BoA p314) P080

Poster

*Environmental Effects Probed by Cryogenic Photoluminescence of Individual Carbon Nanotubes*

**Shen Zhao**, Manuel Nutz, Jonathan Noé, Ming Zheng, Jeffrey Fagan, Alexander Högele

Tuesday, 23 July 2019

NanoBio Symposium

19:00 - 21:00

(BoA p315) P082

Poster

*Mediatorless, Reversible Optical Nanosensor Enabled Through Enzymatic Pocket Doping*

**Alessandra Antonucci**, Vitalijs Zubkovs, Nils Schuergers, Benjamin Lambert, Esra Ahunbay, Ardemis Boghossian

19:00 - 21:00

(BoA p316) P084

Poster

*Chirality-Sorted Single-Walled Carbon Nanotubes for Multidrug/Gene Delivery and Imaging.*

**Anton Naumov**, Md. Tanvir Hasan, Elizabeth Campbell, Giridhar Akkaraju

19:00 - 21:00

(BoA p317) P086

Poster

*Quantification of the Number of Adsorbed DNA Molecules on Single-Walled Carbon Nanotubes*

**Robert Nißler**, Florian A. Mann, Parth Chaturvedi, Jan Horlebein, Daniel Meyer, Lela Vuković, Sebastian Kruss

19:00 - 21:00

(BoA p318) P088

Poster

*Nanoscale Imaging of the Extracellular Space Near Synapses in Live Brain Tissue by Single Carbon Nanotube Tracking*

**Chiara Paviolo**, Joana S. Ferreira, Antony Lee, Laurent Groc, Laurent Cognet

19:00 - 21:00

(BoA p319) P090

Poster

*Bio-Sensing at the Edge of Graphene and H-BN*

**Ralph Scheicher**

19:00 - 21:00

(BoA p320) P092

Poster

*Xeno Nucleic Acid Nanosensors for Enhanced Stability*

**Shang-Jung Wu**, Alice Judith Gillen, Justyna Kupis-Rozmyslowicz, Carlo Gigli, Nils Schuergers, Ardemis Boghossian

19:00 - 21:00

(BoA p321) P094

Poster

*Characterization of Double-Stranded DNA on Single-Walled Carbon Nanotubes (SWCNTs)*

**Shang-Jung Wu**, Nils Schuergers, Kun-Han Lin, Alice Judith Gillen, Clémence Corminboeuf, Ardemis Boghossian

**19:00 - 21:00****(BoA p322) P096***Poster**Nano<sup>2</sup> - Nanotube-Nanobody Conjugates for Near-Infrared Immunolabeling in Vitro and in Vivo***Florian A. Mann**, Zhiyi Lv, Niklas Herrmann, Jörg Großhans, Felipe Opazo, Sebastian Kruss



# Program Wednesday

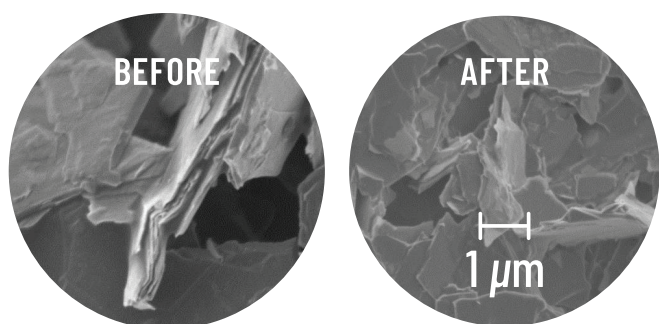
Wednesday  
24 July 2019

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## Plenary program

Franconia Hall

## Session PI5

Chair: Janina Maultzsch

08:30 - 09:15

- K3 **Tony F. Heinz** (Stanford University)  
*Probing and Controlling Excitons in 2D Semiconductors*

09:15 - 09:40

- I10 **Young Hee Lee** (Sungkyunkwan University)  
*Towards in-Situ Single-Crystal Growth for Van Der Waals Heterostructure Thin Film*

09:40 - 10:05

- C4 **Shigeo Maruyama** (University of Tokyo)  
*Application of One-Dimensional Van Der Waals Heterostructures Coaxially Wrapped Around Single-Walled Carbon Nanotubes*

Coffee break

CCW Lobby

## Session PI6

Chair: Michael S. Arnold

10:35 - 11:00

- I11 **Richard Martel** (Université de Montréal)  
*Interfacial Phenomena and Second Order Resonances in Nanocarbons and Exfoliated Black-Phosphorus*

11:00 - 11:25

- C5 **Michael Engel** (IBM)  
*Graphene-Enabled, Directed Nanomaterial Placement From Solution for Large-Scale Device Integration*

11:25 - 11:50

- C6 **Kimmo Mustonen** (University of Vienna)  
*Atomic Scale Imaging and Covalent Modification of a Graphene-Carbon Nanotube Heterostructures*

11:50 - 12:15

- C7 **Ado Jorio** (UFMG)  
*Micro Versus Nano-Raman Spectroscopy in Two-Dimensional Systems*

Lunch break

Wednesday  
24 July 2019

Chair: Esko I. Kauppinen

- |               |       |                                                                                                                                                                                     |
|---------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SEI13 | <b>Mark Hersam</b> (Northwestern University)<br><i>Self-Aligned Short-Channel Van Der Waals Heterojunction Devices</i>                                                              |
| 14:20 - 14:40 | SEI14 | <b>Youfan Hu</b> (Peking University)<br><i>Wafer-Scale Fabrication of Ultrathin Flexible Electronic Based on Carbon Nanotubes With High Performance</i>                             |
| 14:40 - 15:00 | SEI15 | <b>Lijun Liu</b> (Peking University)<br><i>Carbon Nanotube Complementary Gigahertz Integrated Circuits and Their Applications on Wireless Sensor Interface Systems</i>              |
| 15:00 - 15:20 | SEI16 | <b>Er-Xiong Ding</b> (Aalto University)<br><i>Scalable Production of Semiconducting SWCNTs by Floating Catalyst Chemical Vapor Deposition for Ultrahigh-Performance Electronics</i> |
| 15:45         |       | meet for guided tours                                                                                                                                                               |

Chair: Suguru Noda

- |               |       |                                                                                                                                                                                                    |
|---------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SEn13 | <b>Robin Nicholas</b> (Oxford University)<br><i>Solubilization of Single and Multi-Walled CNT With Ethylene-Vinyl Acetate for Conductive Films and Charge Extraction in Perovskite Solar Cells</i> |
| 14:20 - 14:40 | SEn16 | <b>Volodymyr Koman</b> (MIT)<br><i>Ultra-High Thermal Effusivity Materials Based on Graphene for Resonant, Ambient Thermal Energy Harvesting</i>                                                   |
| 14:40 - 15:00 | SEn15 | <b>Bingqing Wei</b> (University of Delaware)<br><i>Tailoring Carbon Nanostructures for Energy Storage Applications</i>                                                                             |
| 15:00 - 15:20 | SEn14 | <b>Il Jeon</b> (University of Tokyo)<br><i>Carbon Nanotubes to Outperform Metal in Perovskite Solar Cells via Dopant Engineering and Hole-Selectivity Control</i>                                  |
| 15:45         |       | meet for guided tours                                                                                                                                                                              |

Chair: Annick Loiseau

- 14:00 - 14:20    S2D14    **Bruno Dlubak** (Unité Mixte de Physique CNRS-Thales)  
*Introducing 2D Materials for Magnetic Tunnel Junctions*
- 14:20 - 14:40    S2D15    **Lara Kühl Teles** (Instituto Tecnológico de Aeronautica)  
*Towards the Survival of Quantum Spin Hall Phase of Group-IV Overlayers on Substrates*
- 14:40 - 15:00    S2D16    **Ilka Kriegel** (Italian Institute of Technology)  
*Light Driven Capacitive Charging of 0D-2D Hybrids*
- 15:00 - 15:20    S2D17    **Patrick Zeller** (Elettra - Sincrotrone Trieste)  
*Chemical Analysis of Suspended Graphene by Spatially Resolved X-Ray Photo-Electron Spectroscopy*
- 15:45                      meet for guided tours

Chair: Stephen Doorn

- |               |      |                                                                                                                                                                                  |
|---------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SSp2 | <b>Annick Loiseau</b> (LEM, CNRS-ONERA)<br><i>Comparing Resonant Raman Spectroscopy and Atomic Resolution Transmission Electron Microscopy for SWCNT Sample Characterization</i> |
| 14:20 - 14:40 | SSp3 | <b>Adnan Riaz</b> (KIT)<br><i>Electroluminescence Excitation Mapping of Excitons and Trions in Monochiral Carbon Nanotube Devices</i>                                            |
| 14:40 - 15:00 | SSp4 | <b>Georgy Gordeev</b> (Freie Universität Berlin)<br><i>Electronic Coupling Between the Walls of Double-Walled Carbon Nanotubes</i>                                               |
| 15:00 - 15:20 | SSp5 | <b>Leandro Malard</b> (Universidade Federal de Minas Gerais)<br><i>Nonlinear Optical Spectroscopy and Imaging in 2D Materials</i>                                                |

15:45 meet for guided tours

Chair: Ming Zheng

- |               |      |                                                                                                                                                                                                        |
|---------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SNB2 | <b>Charlotte Allard</b> (Ecole Polytechnique de Montreal)<br><i>Encapsulated Dyes in Nanotubes: a Biological Perspective</i>                                                                           |
| 14:20 - 14:40 | SNB3 | <b>Sebastian Kruss</b> (Georg-August-Universität Göttingen)<br><i>Targeted Near Infrared Sensing and Imaging With Carbon Nanotubes</i>                                                                 |
| 14:40 - 15:00 | SNB4 | <b>YuHuang Wang</b> (University of Maryland)<br><i>Electrical Sensing With a Tube-in-a-Tube Semiconductor</i>                                                                                          |
| 15:00 - 15:20 | SNB5 | <b>Alessandra Antonucci</b> (Ecole Polytechnique Federale de Lausanne)<br><i>Real-Time Near-Infrared Confocal Imaging of Bacterial Cell Division in the Presence of Single-Walled Carbon Nanotubes</i> |
| 15:45         |      | meet for guided tours                                                                                                                                                                                  |

## Overview of Wednesday's oral presentations

Wednesday, 24 July 2019

Plenary Venue

08:30 - 09:15

(BoA p332) Franconia Hall

K3 (Keynote)

*Probing and Controlling Excitons in 2D Semiconductors*

**Tony F. Heinz**

09:15 - 09:40

(BoA p333) Franconia Hall

I10 (Invited)

*Towards in-Situ Single-Crystal Growth for Van Der Waals Heterostructure Thin Film*

**Young Hee Lee**

09:40 - 10:05

(BoA p334) Franconia Hall

C4 (Contributed)

*Application of One-Dimensional Van Der Waals Heterostructures Coaxially Wrapped Around Single-Walled Carbon Nanotubes*

**Shigeo Maruyama**, Rong Xiang, Taiki Inoue, Yongjia Zheng, Ming Liu, Yuta Sato, Akihito Kumamoto, Yan Li, Shohei Chiashi, Esko Kauppinen, Kazu Suenaga, Yuichi Ikuhara

10:35 - 11:00

(BoA p335) Franconia Hall

I11 (Invited)

*Interfacial Phenomena and Second Order Resonances in Nanocarbons and Exfoliated Black-Phosphorus*

**Richard Martel**

11:00 - 11:25

(BoA p336) Franconia Hall

C5 (Contributed)

*Graphene-Enabled, Directed Nanomaterial Placement From Solution for Large-Scale Device Integration*

**Michael Engel**, Damon Farmer, Jaione Tirapu Azpiroz, Jung-Woo T. Seo, Joohoon Kang, Phaedon Avouris, Mark C. Hersam, Ralph Krupke, Mathias Steiner

11:25 - 11:50

(BoA p337) Franconia Hall

C6 (Contributed)

*Atomic Scale Imaging and Covalent Modification of a Graphene-Carbon Nanotube Heterostructures*

**Kimmo Mustonen**, Alexander Markevich, Christof Hofer, Mukesh Tripathi, Heena Inani, Aqeel Hussain, Esko I. Kauppinen, Toma Susi, Jannik C. Meyer, Jani Kotakoski

11:50 - 12:15

(BoA p338) Franconia Hall

C7 (Contributed)

*Micro Versus Nano-Raman Spectroscopy in Two-Dimensional Systems*

**Ado Jorio**

Wednesday, 24 July 2019

Company Presentation

13:30 - 13:50

(BoA p339) Franconia Hall

LB1 (Company)

*Supercontinuum White Light Lasers: a Review on Technology and Applications*

**Nicolai Granzow**

## Wednesday, 24 July 2019

## Electronics Symposium

14:00 - 14:20

(BoA p340) Panorama 11

SEI13 (Invited)

*Self-Aligned Short-Channel Van Der Waals Heterojunction Devices***Mark Hersam**

14:20 - 14:40

(BoA p341) Panorama 11

SEI14 (Invited)

*Wafer-Scale Fabrication of Ultrathin Flexible Electronic Based on Carbon Nanotubes With High Performance***Youfan Hu**

14:40 - 15:00

(BoA p342) Panorama 11

SEI15 (Contributed)

*Carbon Nanotube Complementary Gigahertz Integrated Circuits and Their Applications on Wireless Sensor Interface Systems***Lijun Liu**, Li Ding, Lian-Mao Peng, Zhiyong Zhang

15:00 - 15:20

(BoA p343) Panorama 11

SEI16 (Contributed)

*Scalable Production of Semiconducting SWCNTs by Floating Catalyst Chemical Vapor Deposition for Ultrahigh-Performance Electronics***Er-Xiong Ding**, Abu Taher Khan, Qiang Zhang, Nan Wei, Aqeel Hussain, Esko I. Kauppinen

## Wednesday, 24 July 2019

## Energy Symposium

14:00 - 14:20

(BoA p344) Franconia Hall

SEn13 (Invited)

*Solubilization of Single and Multi-Walled CNT With Ethylene-Vinyl Acetate for Conductive Films and Charge Extraction in Perovskite Solar Cells***Robin Nicholas**, Giulio Mazzotta, Bernd Sturdza, Markus Dollman, Severin Habisreutinger, Greyson Christoforo, Zhiping Wang, Henry Snaith, Moritz Riede

14:20 - 14:40

(BoA p345) Franconia Hall

SEn16 (Contributed)

*Ultra-High Thermal Effusivity Materials Based on Graphene for Resonant, Ambient Thermal Energy Harvesting***Volodymyr Koman**, Anton Cottrill, Albert Liu, Michael Strano

14:40 - 15:00

(BoA p346) Franconia Hall

SEn15 (Invited)

*Tailoring Carbon Nanostructures for Energy Storage Applications***Bingqing Wei**

15:00 - 15:20

(BoA p347) Franconia Hall

SEn14 (Contributed)

*Carbon Nanotubes to Outperform Metal in Perovskite Solar Cells via Dopant Engineering and Hole-Selectivity Control***Il Jeon**, Ahmed Shawky, Yutaka Matsuo, Shigeo Maruyama, Esko Kauppinen



## Wednesday, 24 July 2019

## 2D Materials Symposium

14:00 - 14:20

(BoA p348) Panorama 13

S2D14 (Invited)

*Introducing 2D Materials for Magnetic Tunnel Junctions***Bruno Dlubak**

14:20 - 14:40

(BoA p349) Panorama 13

S2D15 (Contributed)

*Towards the Survival of Quantum Spin Hall Phase of Group-IV Overlayers on Substrates***Lara Kühl Teles**, Filipe Matusalém, Daniel Schwalbe Koda, Marcelo Marques, Friedhelm Bechstedt

14:40 - 15:00

(BoA p350) Panorama 13

S2D16 (Invited)

*Light Driven Capacitive Charging of 0D-2D Hybrids***Ilka Kriegel**, Nicholas J. Borys, Kehao Zhang, Adam W. Jansons, Brandon M. Crockett, Kristopher M. Koskela, Edward S. Barnard, Erika Penzo, James E. Hutchison, Joshua A. Robinson, Liberato Manna, P. James Schuck

15:00 - 15:20

(BoA p351) Panorama 13

S2D17 (Contributed)

*Chemical Analysis of Suspended Graphene by Spatially Resolved X-Ray Photo-Electron Spectroscopy***Patrick Zeller**, Matteo Amati, Luca Gregoratti

## Wednesday, 24 July 2019

## Spectroscopy Symposium

14:00 - 14:20

(BoA p352) Panorama 12

SSp2 (Invited)

*Comparing Resonant Raman Spectroscopy and Atomic Resolution Transmission Electron Microscopy for SWCNT Sample Characterization***Annick Loiseau**, Alice Castan, Frédéric Fossard, Salomé Forel, Guillaume Wang, Wim Wenseleers, Sofie Cambré

14:20 - 14:40

(BoA p353) Panorama 12

SSp3 (Contributed)

*Electroluminescence Excitation Mapping of Excitons and Trions in Monochiral Carbon Nanotube Devices***Adnan Riaz**, Marco Gaulke, Felix Pyatkov, Simone Dehm, Han Li, Benjamin Flavel, Frank Hennrich, Manfred Kappes, Yuan Chen, Ralph Krupke

14:40 - 15:00

(BoA p354) Panorama 12

SSp4 (Contributed)

*Electronic Coupling Between the Walls of Double-Walled Carbon Nanotubes***Georgy Gordeev**, Soeren Wasseroth, Han Li, Ralph Krupke, Ado Jorio, Benjamin Flavel, Stephanie Reich

15:00 - 15:20

(BoA p355) Panorama 12

SSp5 (Invited)

*Nonlinear Optical Spectroscopy and Imaging in 2D Materials***Leandro Malard**

Wednesday, 24 July 2019

NanoBio Symposium

14:00 - 14:20

(BoA p356) Panorama 10

SNB2 (Invited)

*Encapsulated Dyes in Nanotubes: a Biological Perspective***Charlotte Allard**, Nathalie Y-Wa Tang, Etienne Gaufrès, Rafaela Oliveira Do Nascimento, Patrick Desjardins, Richard Martel

14:20 - 14:40

(BoA p357) Panorama 10

SNB3 (Invited)

*Targeted Near Infrared Sensing and Imaging With Carbon Nanotubes***Sebastian Kruss**

14:40 - 15:00

(BoA p358) Panorama 10

SNB4 (Invited)

*Electrical Sensing With a Tube-in-a-Tube Semiconductor***YuHuang Wang**

15:00 - 15:20

(BoA p359) Panorama 10

SNB5 (Contributed)

*Real-Time Near-Infrared Confocal Imaging of Bacterial Cell Division in the Presence of Single-Walled Carbon Nanotubes***Alessandra Antonucci**, Nils Schuergers, Vitalijs Zubkovs, Ardemis Boghossian

# Program Thursday

# Introduction

For more than 20 years of technological research and development, Professor Xiaogang Sun of Nanchang University founded NanoCarbon Co Ltd successfully and received the investment of 550 million yuan from Zhengzhou DENGCAO Group Co., Ltd. The company consists of JIANGXI NanoCarbon Co Ltd and HENAN NanoCarbon Co Ltd, mainly committed to the industrial production and application of whisker carbon nanotubes. JIANGXI NanoCarbon Co Ltd invested 100 million yuan, with an annual processing of 30 tons of carbon nanotubes powder project. HENAN NanoCarbon Co Ltd as a production base invested 450 million yuan to build an annual processing of 500 tons of carbon nanotubes powder project. Production base construction in two phases, the first stage capacity of 200 tons, the second phase capacity of 300 tons.

The company has completely independent intellectual property rights, accumulative application for 106 patents, of which 2 international PCT patents, and has won the national license of 9 patents for invention. The project technology has reached the international leading level, and has completed the construction of the first domestic production line of carbon nanotubes whisker, At the same time, the whole production process is non-toxic and harmless, green and environmentally friendly.

Whisker carbon nanotubes as a new generation of linear high-end carbon nanotubes, Which can be widely used in lithium ion batteries, electro-thermal conversion devices and nanocomposites, has the characteristics of non-winding, easy to disperse, ultra-high purity, ultra-high crystallinity, electrical conductivity, excellent thermal conductivity and so on. At present, the main products of the company are Whisker CNT powder of various specifications, conductive paste and other carbon-based materials.

Mobile: +86 15170074646 (Mr Pan)  
+86 13879159026 (Mr Sun)  
+86 13383812313 (Mr Wu)

Email: jxklvgs@163.com

Add: 8 South Xinwei road,  
Nanchang, Jiangxi, 330052 China



## Plenary program

Franconia Hall

## Session PI7

Chair: Yuichiro Kato

- 08:30 - 09:15 K4 **H.-S. Philip Wong** (Stanford University)  
*Progress Towards a Carbon Nanotube Transistor Logic Technology*
- 09:15 - 09:40 I12 **Matteo Pasquali** (Rice University)  
*A Better Future for Carbon Nanomaterials?*
- 09:40 - 10:05 I13 **YuHuang Wang** (University of Maryland)  
*Dynamic Gating of Infrared Radiation in a Textile*

Coffee break

CCW Lobby

## Session PI8

Chair: Yuhuang Wang

- 10:35 - 11:00 C8 **Yoshiyuki Nonoguchi** (Nara Institute of Science and Technology)  
*Thermoelectric Transport in Polymer-Functionalized Semiconducting Carbon Nanotube Films*
- 11:00 - 11:25 C9 **Weizhong Qian** (Tsinghua University)  
*3D AI Foam-Enhanced Graphene-Based High Voltage Supercapacitor*
- 11:25 - 11:50 C10 **Mattia Scagliotti** (Università degli studi di Roma "Tor Vergata")  
*Fast Response Graphene/N-Si Photodetector*
- 11:50 - 12:15 I14 **Ming Xu** (Huazhong U. of Science and Technology)  
*Advances in Structural Design of Three-Dimensional Nanomaterials for the Extreme Environment Applications*

Lunch break

Chair: Youfan Hu

- |               |       |                                                                                                                                                                      |
|---------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SEI17 | <b>Albert G. Nasibulin</b> (Skolkovo Institute of Science and Technology)<br><i>Holey Single-Walled Carbon Nanotubes for Ultra-Fast Broadband Bolometers</i>         |
| 14:20 - 14:40 | SEI18 | <b>Ze Ma</b> (Peking University)<br><i>Improving Performance and Uniformity of Carbon Nanotube Network Based Photodiodes via Yttrium Oxide Coating-and-Decoating</i> |
| 14:40 - 15:00 | SEI19 | <b>Thomas Szkopek</b> (McGill University)<br><i>Large Area Ion Sensitive Graphene Field Effect Transistors</i>                                                       |
| 15:00 - 15:20 | SEI20 | <b>Dmitri Lioubtchenko</b> (Polish Academy of Sciences)<br><i>Thin Carbon Nanotube Layers for Terahertz Wave Applications</i>                                        |

10 minute break

Chair: Albert G. Nasibulin

- |               |       |                                                                                                                                                                                       |
|---------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SEI21 | <b>Volodymyr Koman</b> (MIT)<br><i>Colloidal, Nanoelectronic State Machines Based on 2D Materials as Smart Aerosolized Probes and Recorders</i>                                       |
| 15:50 - 16:10 | SEI22 | <b>Alexey Tsapenko</b> (Skoltech)<br><i>Enhancing Optoelectronic Performance of Randomly Oriented Single Walled Carbon Nanotube Films for Transparent and Conducting Applications</i> |

Coffee break

CCW Lobby

Chair: Yanwu Zhu

- |               |       |                                                                                                                                                                    |
|---------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | SEn17 | <b>Yanwu Zhu</b> (University of Science and Technology of China)<br><i>Construction of Carbon Interface for Electrical Energy Storage</i>                          |
| 14:40 - 15:00 | SEn28 | <b>Juan Vilatela</b> (IMDEA Materials)<br><i>Operando Characterisation of CNT Fibre Fabric-Based Electrodes and Their Application for High-Toughness Batteries</i> |

Coffee break

CCW Lobby

Chair: Bruno Dlubak

- |               |       |                                                                                                                                                |
|---------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | S2D18 | <b>Luca Banszerus</b> (RWTH Aachen)<br><i>Electrostatically Defined Quantum Devices in Bilayer Graphene</i>                                    |
| 14:40 - 15:00 | S2D19 | <b>Igor Bondarev</b> (North Carolina Central University)<br><i>Interlayer Exciton Complexes in Planar Stacked Quasi-2D Heterostructures</i>    |
| 15:00 - 15:20 | S2D20 | <b>Sabina Caneva</b> (Kavli Institute of Nanoscience Delft)<br><i>Mechanically Controlled Quantum Interference in Graphene Break Junctions</i> |

10 minute break

Chair: Christian Schneider

- |               |       |                                                                                                                                                                              |
|---------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | S2D21 | <b>Andreas Sperlich</b> (Julius-Maximilians-Universität Würzburg)<br><i>Room Temperature Initialisation and Readout of Intrinsic Spin Defects in a Van Der Waals Crystal</i> |
| 15:50 - 16:10 | S2D22 | <b>Yang Wei</b> (Tsinghua University)<br><i>Mixed-Dimensional Van Der Waals Heterostructures Based on Carbon Nanotubes and 2D Materials</i>                                  |
| 16:10 - 16:30 | S2D23 | <b>Bernard Plaças</b> (ENS Paris)<br><i>A Dirac Fermion Wave Reflector Based on the Laws of Geometrical Optics</i>                                                           |

Coffee break

CCW Lobby



Chair: Achim Hartschuh

- |               |      |                                                                                                                                                         |
|---------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:40 | SSp6 | <b>Kaihui Liu</b> (Peking University)<br><i>Optical Spectroscopy of Individual Carbon Nanotubes With Defined Chirality</i>                              |
| 14:40 - 15:00 | SSp7 | <b>Sofie Cambré</b> (University of Antwerp)<br><i>Controlling the Inner Dielectric Environment of Carbon Nanotubes To Tune Their Optical Properties</i> |
| 15:00 - 15:20 | SSp8 | <b>Yoshikazu Homma</b> (Tokyo University of Science)<br><i>Temperature Change of Water Adsorption Layer on Suspended Single-Walled Carbon Nanotube</i>  |

10 minute break

Chair: Ado Jorio

- |               |       |                                                                                                                                                       |
|---------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SSp9  | <b>Yuichiro Kato</b> (RIKEN)<br><i>Exciton Physics in Air-Suspended Carbon Nanotubes</i>                                                              |
| 15:50 - 16:10 | SSp10 | <b>Ernesto Joselevich</b> (Weizmann Institute of Science)<br><i>Shaping Nanotubes and Nanowires With Surfaces for Electronics and Optoelectronics</i> |
| 16:10 - 16:30 | SSp11 | <b>Akihiro Ishii</b> (RIKEN)<br><i>Decay Dynamics and Diffusion Properties of Bright and Dark Excitons in Air-Suspended Carbon Nanotubes</i>          |

Coffee break

CCW Lobby

Thursday  
25 July 2019

Chair: Sebastian Kruss

- |               |      |                                                                                                                                                    |
|---------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 - 14:20 | SNB6 | <b>Eri Hirata</b> (Hokkaido University)<br><i>The Advantages of Carbon Nanomaterials for Bone Tissue Engineering</i>                               |
| 14:20 - 14:40 | SNB7 | <b>Silvana Fiorito</b> (National Research Council)<br><i>Carbon Nanotubes Impact Microglia Function and Phenotype</i>                              |
| 14:40 - 15:00 | SNB8 | <b>Minfang Zhang</b> (AIST)<br><i>Quantitative Evaluation of the Biodegradation of Single-Wall Carbon Nanotubes in the Mouse Lung and Liver</i>    |
| 15:00 - 15:20 | SNB9 | <b>Daniel Heller</b> (Memorial Sloan Kettering Cancer Center)<br><i>Synthetic Molecular Recognition Optical Nanocarbon Sensors for Diagnostics</i> |

10 minute break

Chair: Dan Heller

- |               |       |                                                                                                                                                                         |
|---------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:30 - 15:50 | SNB10 | <b>Ming Zheng</b> (National Institute of Standards and Technology)<br><i>Molecular Perceptron: Perception-Based Biosensing Using DNA-Wrapped Carbon Nanotube Arrays</i> |
| 15:50 - 16:10 | SNB11 | <b>Sonia Freddi</b> (Univeristà Cattolica del Sacro Cuore)<br><i>Functionalized CNT-Based Sensors Platform for Breath Analysis Application</i>                          |
| 16:10 - 16:30 | SNB12 | <b>Gili Bisker</b> (Tel Aviv University)<br><i>Protein Recognition Using Functionalized Fluorescent Single-Walled Carbon Nanotubes</i>                                  |

Coffee break

CCW Lobby

## Poster Sessions

CCW Lobby Level

17:00 - 18:30

Poster Session 5 (odd poster numbers)

19:00 - 21:00

Poster Session 6 (even poster numbers)

## Overview of Thursday's oral presentations

Thursday, 25 July 2019

Plenary Venue

08:30 - 09:15

(BoA p372) Franconia Hall

K4 (Keynote)

*Progress Towards a Carbon Nanotube Transistor Logic Technology*

**H.-S. Philip Wong**

09:15 - 09:40

(BoA p373) Franconia Hall

I12 (Invited)

*a Better Future for Carbon Nanomaterials?*

**Matteo Pasquali**

09:40 - 10:05

(BoA p374) Franconia Hall

I13 (Invited)

*Dynamic Gating of Infrared Radiation in a Textile*

**YuHuang Wang**

10:35 - 11:00

(BoA p375) Franconia Hall

C8 (Contributed)

*Thermoelectric Transport in Polymer-Functionalized Semiconducting Carbon Nanotube Films*

**Yoshiyuki Nonoguchi**, Ami Takata, Chigusa Goto, Junichi Komoto, Tsuyoshi Kawai

11:00 - 11:25

(BoA p376) Franconia Hall

C9 (Contributed)

*3D AI Foam-Enhanced Graphene-Based High Voltage Supercapacitor*

**Weizhong Qian**

11:25 - 11:50

(BoA p377) Franconia Hall

C10 (Contributed)

*Fast Response Graphene/N-Si Photodetector*

**Mattia Scagliotti**, Matteo Salvato, Maurizio De Crescenzi, Nikolai G Kovalchuk, Ivan V Komissarov, Serghej L Prischepa, Daniele Catone, Lorenzo Di Mario, Maurizio Boscardin, Michele Crivellari, Paola Castrucci

11:50 - 12:15

(BoA p378) Franconia Hall

I14 (Invited)

*Advances in Structural Design of Three-Dimensional Nanomaterials for the Extreme Environment Applications*

**Ming Xu**

Thursday, 25 July 2019

Electronics Symposium

14:00 - 14:20

(BoA p379) Panorama 11

SE17 (Invited)

*Holey Single-Walled Carbon Nanotubes for Ultra-Fast Broadband Bolometers*

**Albert G. Nasibulin**, Daria S. Kopylova, Fedor S. Fedorov, Alena A. Alekseeva, Evgenia P. Gilshteyn, Alexey P. Tsapenko, Anton V. Bubis, Artem K. Grebenko, Zakhar I. Popov, Pavel B. Sorokin, Yuriy G. Gladush, Anton S. Anisimov

**14:20 - 14:40 (BoA p380) Panorama 11**

*SEI18 (Contributed) Improving Performance and Uniformity of Carbon Nanotube Network based Photodiodes via Yttrium Oxide Coating-and-Decoating*

**Ze Ma**, Jie Han, Sheng Wang, Lian-Mao Peng

**14:40 - 15:00 (BoA p381) Panorama 11**

*SEI19 (Contributed) Large Area Ion Sensitive Graphene Field Effect Transistors*

**Thomas Szkopek**, Ibrahim Fakih, Farzaneh Mahvash, Boutheina Ghaddab, Alba Centeno, Amaia Zurutuza, Mohamed Siaj

**15:00 - 15:20 (BoA p382) Panorama 11**

*SEI20 (Contributed) Thin Carbon Nanotube Layers for Terahertz Wave Applications*

**Dmitri Lioubtchenko**, Serguei Smirnov, Mikhail Khodzitsky, Joachim Oberhammer

**15:50 - 16:10 (BoA p383) Panorama 11**

*SEI21 (Contributed) Colloidal, Nanoelectronic State Machines Based on 2D Materials as Smart Aerosolized Probes and Recorders*

**Volodymyr Koman**, Pingwei Liu, Daichi Kozawa, Albert Liu, Michael Strano

**16:10 - 16:30 (BoA p384) Panorama 11**

*SEI22 (Contributed) Enhancing Optoelectronic Performance of Randomly Oriented Single Walled Carbon Nanotube Films for Transparent and Conducting Applications*

**Alexey Tsapenko**, Stepan Romanov, Daria Satco, Dmitry Krasnikov, Anastasia Goldt, Eugene Shulga, Zakhar Popov, Anton Anisimov, Pavel Sorokin, Esko Kauppinen, Albert Nasibulin

Thursday, 25 July 2019

Energy Symposium

**14:40 - 15:00 (BoA p385) Franconia Hall**

*SEn17 (Invited) Construction of Carbon Interface for Electrical Energy Storage*

**Yanwu Zhu**

**15:50 - 16:10 (BoA p386) Franconia Hall**

*SEn18 (Contributed) Operando Characterisation of CNT Fibre Fabric-Based Electrodes and Their Application for High-Toughness Batteries*

**Juan Vilatela**, Nicola Boaretto, Jesús Almenara, Anastasiia Mikhalech, Rebeca Marcilla

Thursday, 25 July 2019

2D Materials Symposium

**14:00 - 14:40 (BoA p387) Panorama 13**

*S2D18 (Overview) Electrostatically Defined Quantum Devices in Bilayer Graphene*

**Luca Banszerus**, Christoph Stampfer

**14:40 - 15:00 (BoA p388) Panorama 13**

*S2D19 (Invited) Interlayer Exciton Complexes in Planar Stacked Quasi-2D Heterostructures*

**Igor Bondarev**, Maria Vladimirova

**15:00 - 15:20****(BoA p389) Panorama 13***S2D20 (Contributed) Mechanically Controlled Quantum Interference in Graphene Break Junctions***Sabina Caneva**, Pascal Gehring, Martin Lee, Victor Garcia-Suarez, Amador Garcia-Fuente, Matthijs Hermans, Jaime Ferrer, Cees Dekker, Herre van der Zant**15:30 - 15:50****(BoA p390) Panorama 13***S2D21 (Contributed) Room Temperature Initialisation and Readout of Intrinsic Spin Defects in a Van Der Waals Crystal***Andreas Sperlich**, A. Gottscholl, M. Kianinia, V. Soltamov, C. Bradac, C. Kasper, K. Krambrock, M. Toth, I. Aharonovich, V. Dyakonov**15:50 - 16:10****(BoA p391) Panorama 13***S2D22 (Invited) Mixed-Dimensional Van Der Waals Heterostructures Based on Carbon Nanotubes and 2D Materials***Yang Wei**, Jin Zhang, Ke Zhang, Kaili Jiang, Shoushan Fan**16:10 - 16:30****(BoA p392) Panorama 13***S2D23 (Contributed) a Dirac Fermion Wave Reflector Based on the Laws of Geometrical Optics***Bernard Plaças**

Thursday, 25 July 2019

Spectroscopy Symposium

**14:00 - 14:40****(BoA p393) Panorama 12***SSp6 (Overview) Optical Spectroscopy of Individual Carbon Nanotubes With Defined Chirality***Kaihui Liu****14:40 - 15:00****(BoA p394) Panorama 12***SSp7 (Invited) Controlling the Inner Dielectric Environment of Carbon Nanotubes To Tune Their Optical Properties***Sofie Cambré**, Jochen Campo, Bea Botka, Wouter van Werveke, Wim Wenseleers, Jan Obrzut, Jeffrey A. Fagan**15:00 - 15:20****(BoA p395) Panorama 12***SSp8 (Contributed) Temperature Change of Water Adsorption Layer on Suspended Single-Walled Carbon Nanotube***Yoshikazu Homma**, Yuta Saito, Yuichirou Tanaka, Genta Yamaguchi, Shohei Chiashi**15:30 - 15:50****(BoA p396) Panorama 12***SSp9 (Invited) Exciton Physics in Air-Suspended Carbon Nanotubes***Yuichiro Kato****15:50 - 16:10****(BoA p397) Panorama 12***SSp10 (Invited) Shaping Nanotubes and Nanowires With Surfaces for Electronics and Optoelectronics***Ernesto Joselevich**

**16:10 - 16:30****(BoA p398) Panorama 12**

*SSp11 (Contributed)* *Decay Dynamics and Diffusion Properties of Bright and Dark Excitons in Air-Suspended Carbon Nanotubes*

**Akihiro Ishii**, Hidenori Machiya, Yuichiro K. Kato

Thursday, 25 July 2019

NanoBio Symposium

**14:00 - 14:20****(BoA p399) Panorama 10**

*SNB6 (Invited)* *the Advantages of Carbon Nanomaterials for Bone Tissue Engineering*

**Eri Hirata**

**14:20 - 14:40****(BoA p400) Panorama 10**

*SNB7 (Invited)* *Carbon Nanotubes Impact Microglia Function and Phenotype*

**Silvana Fiorito**

**14:40 - 15:00****(BoA p401) Panorama 10**

*SNB8 (Contributed)* *Quantitative Evaluation of the Biodegradation of Single-Wall Carbon Nanotubes in the Mouse Lung and Liver*

**Minfang Zhang**, Ying Xu, Mei Yang, Masako Yudasaka, Toshiya Okazaki

**15:00 - 15:20****(BoA p402) Panorama 10**

*SNB9 (Contributed)* *Synthetic Molecular Recognition Optical Nanocarbon Sensors for Diagnostics*

**Daniel Heller**, Januka Budhathoki-Uprety

**15:30 - 15:50****(BoA p403) Panorama 10**

*SNB10 (Invited)* *Molecular Perceptron: Perception-Based Biosensing Using DNA-Wrapped Carbon Nanotube Arrays*

**Ming Zheng**

**15:50 - 16:10****(BoA p404) Panorama 10**

*SNB11 (Contributed)* *Functionalized CNT-Based Sensors Platform for Breath Analysis Application*

**Sonia Freddi**, Stefania Pagliara, Giovanni Drera, Aleksei Emelianov, Ivan Bobrinetskiy, Daria Kopylova, Maria Chiesa, Paolo Montuschi, Albert Nasibulin, Luigi Sangaletti

**16:10 - 16:30****(BoA p405) Panorama 10**

*SNB12 (Contributed)* *Protein Recognition Using Functionalized Fluorescent Single-Walled Carbon Nanotubes*

**Gili Bisker**

## Overview of Thursday's poster presentations

Thursday, 25 July 2019

Plenary Venue

**17:00 - 18:30****(BoA p408) P001**

*Poster* *Superdurable and Superelastic Carbon Nanotubes on the Macroscale*

**Yunxiang Bai**, Rufan Zhang, Fei Wei

17:00 - 18:30

(BoA p409) P003

Poster

*the Electrical and Thermal Transport at the Interface Between Sb<sub>2</sub>Te<sub>3</sub> and Graphene Heterostructures***Seongkyun Kim**, Seongkyun Kim, Wonjae Jeon, Krishna P.Dhakal, Jeongyong Kim, Seunghyun Baik

17:00 - 18:30

(BoA p410) P005

Poster

*Unravelling Effect of Carbon Nanotube Powders by Highly Viscous Liquids***Kazufumi Kobashi**, Atsuko Sekiguchi, Takeo Yamada, Toshiya Okazaki

17:00 - 18:30

(BoA p411) P007

Poster

*A Mass-Scale Growth of Carbon Nanofiber Mats Over Copper Catalysts***Jarrn-Horng Lin**, Chung-Hsuan Hsiao

17:00 - 18:30

(BoA p412) P009

Poster

*Carbon Nanotube Film Gate in Vacuum Electronic Devices***Peng Liu**

17:00 - 18:30

(BoA p413) P011

Poster

*Photo-Driven Nanoactuators Based on Carbon Nanocoil and Vanadium Dioxide Bimorph***He Ma**

17:00 - 18:30

(BoA p414) P013

Poster

*in Situ TEM Observation of CNT Formation via Plastic Deformation***Hideki Masuda**, Yu Kikuchi, Kanade Matsuo, Toshihiko Fujimori, Takeshi Hikata, Soichiro Okubo, Yoshikazu Ito, Jun-ichi Fujita

17:00 - 18:30

(BoA p415) P015

Poster

*First Steps Towards Bottom-Up Synthesis of Graphene Nanoribbon From Fluorinated Precursors***Valeria Milotti**, Ann-Kristin Steiner, Thomas Pichler, Konstantin Amsharov

17:00 - 18:30

(BoA p416) P017

Poster

*Reductive Alkylation of S-SWNTs***Kerstin Müller**, Martina Wederhake, Friedrich Schöppler, Tobias Hertel

17:00 - 18:30

(BoA p417) P019

Poster

*Quantifying Doping Levels in Carbon Nanotubes by Optical Spectroscopy***Florian Oberndorfer**, Klaus H. Eckstein, Melanie M. Achsnich, Friedrich Schöppler, Tobias Hertel

17:00 - 18:30

(BoA p418) P021

Poster

*Selective Dry Pick-Up Of CVD Grown CNTs For Integration In 2D Van Der Waals Heterostructures***Taoufiq Ouaj**, Christoph Stampfer

17:00 - 18:30

(BoA p419) P023

Poster

*Highly Conductive Auxetic CNT-Graphene Hybrid Buckypaper***Shashikant Patole**



**17:00 - 18:30****(BoA p420) P025**

Poster

*One-Dimensional Nanoobjects With Alternating Chains and Polycyclic Graphene-Like Regions***Andrey Popov**, Alexander Sinitsa, Irina Lebedeva, Andrey Knizhnik, Dimas G.**17:00 - 18:30****(BoA p421) P027**

Poster

*Optical Absorption in the Two-Dimensional Hexagonal Materials***Fenda Rizky Pratama**, M. Shoufie Ukhtary, Riichiro Saito**17:00 - 18:30****(BoA p422) P029**

Poster

*Multifunctional Polymeric Acid Doping, Anti-Reflection, and Encapsulation of Carbon Nanotube-Si Solar Cells With Record-High Efficiency and Stability***Yang Qian**, Il Jeon, Ya-Lun Ho, Esko I. Kaupinnen, Jean-Jacques Delaunay, Shigeo Maruyama**17:00 - 18:30****(BoA p423) P031**

Poster

*Contact Induced Phase Separation of Alloy Catalyst for Efficient Carbon Nanotube Growth***Lu Qiu**, Feng Ding**17:00 - 18:30****(BoA p424) P033**

Poster

*Snap-Through Buckling Bi-Stability in Suspended Carbon Nanotube Resonators***Sharon Rechnitz**, Tal Tabachnik, Michael Shlafman, Shlomo Shlafman, Yuval Yaish**17:00 - 18:30****(BoA p425) P035**

Poster

*Modeling of Graphene-Based Conductors***Leo Rizzi**, Andreas Zienert, Jörg Schuster, Martin Köhne, Stefan E. Schulz**17:00 - 18:30****(BoA p426) P037**

Poster

*Analysis of Furnace Gas Evolved During Carbon Nanotube Fibre Production***James Ryley**, James Ryley, John Bulmer, Adarsh Kaniyoor, Thurid Gspann, Martin Sparkes, William O&amp, James amp**17:00 - 18:30****(BoA p427) P039**

Poster

*Electron Transport Through Graphene Nanoribbons With Edge Roughness***Jörg Schuster**, Fabian Teichert, Tom Rodemund**17:00 - 18:30****(BoA p429) P043**

Poster

*CNT Supported Mn-Doped ZnO Nanoparticles as Competent Visible Light-Active Photocatalyst***Ahmed Shawky**, Reda M. Mohammed

## Thursday, 25 July 2019

## Electronics Symposium

19:00 - 21:00

(BoA p430) P046

Poster

*High-Throughput Preparation of Wafer-Scale Highly Uniform Carbon Nanotube Films for Applications of Electronics and Optoelectronics*

**Wei Su**, Dehua Yang, Jiaming Cui, Shilong Li, Xiaojun Wei, Weiya Zhou, Huaping Liu, Sishen Xie

19:00 - 21:00

(BoA p431) P048

Poster

*Threshold Voltage Tuning by Controlled Doping for Low-Power Complementary Carbon Nanotube Integrated Circuits on Flexible Substrate*

**Fu-Wen Tan**, Jun Hirotsu, Yoshiyuki Nonoguchi, Shigeru Kishimoto, Yutaka Ohno

19:00 - 21:00

(BoA p432) P050

Poster

*Understanding the Encapsulation of Organic Salts in Single-Walled Carbon Nanotubes. Band-Gap Opening in Metallic SWNTs.*

**Julia Villalva**, Belén Nieto-Ortega, Mariano Vera-Hidalgo, Luisa Ruiz-González, Enrique Burzurí, Emilio M. Pérez

19:00 - 21:00

(BoA p433) P052

Poster

*Towards Microwave Optomechanics Using a Superconducting Carbon Nanotube Weak Link*

**Marco Will**, Jukka-Pekka Kaikkonen, Dmitry Golubev, Yongping Liao, Patrik Laiho, Thanniyil Sebastian Abhilash, Pertti Hakonen

19:00 - 21:00

(BoA p434) P054

Poster

*Poly(P-Styrene-Sulfonic Acid) as Dispersant and Stable Dopant for Carbon Nanotubes*

**Rongbin Xie**, Suguru Noda

19:00 - 21:00

(BoA p435) P056

Poster

*Charge Modulation Spectroscopy of Semiconducting SWCNT Networks*

**Nicolas Zorn**, Francesca Scuratti, Felix Berger, Andrea Perinot, Mario Caironi, Jana Zaumseil

## Thursday, 25 July 2019

## 2D Materials Symposium

17:00 - 18:30

(BoA p436) P059

Poster

*Thermal and Electrical Characteristics of Epoxy Composites With Graphite Platelets Coated by Amorphous Carbon and Ceramic Particles*

**Solbi Shin**

## Thursday, 25 July 2019

## Energy Symposium

17:00 - 18:30

(BoA p437) P061

Poster

*Electrochemical Measurements of Polyaniline With and Without MWNTs*

**Fahima Djefafli**, Ouanassa Guellati, Ilyes Terrab, Fahima Djefafli, Assia Nait-Merzoug, Aicha Harat, Simon Detriche, Zineb Mekhalif, Mohamed Guerioune

- 17:00 - 18:30** (BoA p438) P063  
 Poster *Modification of Graphite Derivatives by Solution Plasma*  
**Hae Kyung Jeong**
- 17:00 - 18:30** (BoA p439) P065  
 Poster *Effect of Liquid Phase Plasma Irradiation in Hydrogen Production by Photocatalytic Water Splitting With Ni-TiO<sub>2</sub>/Carbon Nanotube*  
**Sang-Chul Jung**, Seo Jin Ki, Kay-Hyeok An, Yoong Ahm Kim
- 17:00 - 18:30** (BoA p440) P067  
 Poster *Site-Dependent Doping Mechanism and Thermoelectric Properties of Sb-Doped SnSe<sub>2</sub>*  
**Young Soo Lim**, Jinsik Choi, Min Ji Kim, Ji-Hoon Shim, Changhoon Lee
- 17:00 - 18:30** (BoA p441) P069  
 Poster *Enhancement of Carbon Nanotube Yarn Based Thermoelectric Properties by Interfacial Graphene Like Layers Converted From Residual Amorphous Carbon*  
**Kazuki Omoto**, Hirotaka Inoue, Shogo Iemoto, Masaki Hada, Taisuke Hasegawa, Takeshi Nishikawa, Yoshifumi Yamashita, Satoshi Maeda, Yasuhiko Hayashi, Paneer Selvam Karthik
- 17:00 - 18:30** (BoA p442) P071  
 Poster *InP/ZnS Quantum Dots Application in Inverted Solar Cell*  
**Anna Pidluzhna**, Pavlo Stakhira, Glib Baryshnikov
- 17:00 - 18:30** (BoA p443) P073  
 Poster *Synthesis of a New Type of Perovskites Materials and Hole-Transporting Materials for Improving the Solar Cell Efficiency*  
**Someshwar Pola**
- 17:00 - 18:30** (BoA p444) P075  
 Poster *Semiconducting Carbon Nanotubes for Grain Engineering in Perovskite Solar Cells*  
**Seungju Seo**, Il Jeon, Rong Xiang, Takeshi Tanaka, Jin-Wook Lee, Donguk Suh, Ryosuke Nishikubo, Akinori Saeki, Shohei Chiashi, Junichiro Shiomi, Hiromichi Kataura, Yang Yang, Yutaka Matsuo, Shigeo Maruyama
- 17:00 - 18:30** (BoA p445) P077  
 Poster *Uniform Coating of Nano-Carbon Layer on SiO<sub>x</sub> in Aggregated Fluidized Bed as High-Performance Anode Material*  
**Zhexi Xiao**, Chunhui Yu, Fei Wei
- 17:00 - 18:30** (BoA p446) P079  
 Poster *Advanced Nanocarbon Energy Materials for Lithium-Sulfur Batteries*  
**Qiang Zhang**

Thursday, 25 July 2019

Plenary Venue

19:00 - 21:00

(BoA p447) P002

Poster

*Growth Mechanism of Multi-Millimeter-Tall Single-Wall Carbon Nanotube Forests Using Fe/Gd/Al Catalysts*

**Hisashi Sugime**, Rei Nakagawa, Toshihiro Sato, Cinzia Cepek, Suguru Noda

19:00 - 21:00

(BoA p448) P004

Poster

*Ultrafast Transport of Water Molecules Through Centimeter-Long Carbon Nanotubes*

**Silei Sun**, Zhenxing Zhu, Boyuan Shen, Yunxiang Bai, Rufan Zhang, Fei Wei

19:00 - 21:00

(BoA p449) P006

Poster

*Flexible Terahertz Camera With Microscale Free-Standing Carbon Nanotube Film Array*

**Daichi Suzuki**, Koji Ishibashi, Yukio Kawano

19:00 - 21:00

(BoA p450) P008

Poster

*Non-Volatile Optical Memory With Suspended Graphene Nanoribbons*

**Hiroo Suzuki**, Toshiro Kaneko, Toshiaki Kato

19:00 - 21:00

(BoA p451) P010

Poster

*Quantitative Measures of Crystallinity in Carbon Nanotubes and its Influence on Mechanical Behaviour*

**Krister Svensson**, Mattias Flygare

19:00 - 21:00

(BoA p452) P012

Poster

*Carrier Density Control of SWCNTs by Chemical Doping for Electric Power Generation by Electrolyte Solution Flow*

**Takeshi Tanaka**, Guowei Wang, Atsushi Hirano, Hiromichi Kataura

19:00 - 21:00

(BoA p453) P014

Poster

*Effects of Tungsten Catalyst Addition on the Properties of Direct-Spun CNT Materials*

**Jeronimo Terrones**, Adarsh Kaniyoor, Jenifer Mizen, James Elliott

19:00 - 21:00

(BoA p454) P016

Poster

*Free-Standing Carbon Nanotube Films for Extreme Ultraviolet Pellicle Application*

**Marina Y. Timmermans**, Marina Mariano, Ivan Pollentier, Cedric Huyghebaert, Emily E. Gallagher

19:00 - 21:00

(BoA p455) P018

Poster

*Bifacial Raman Enhancement on Monolayer Two-Dimensional Materials*

**Lianming Tong**, Na Zhang, Jingjing Lin, Wei Hu, Liangbo Liang, Rui Wang, Xue Luo, Yi Luo, Xiaohui Qiu, Jin Zhang

- 19:00 - 21:00** (BoA p456) P020  
*Poster* *Tunable Properties of Pristine and Filled Single-Wall Carbon Nanotubes Assembled in Macrostructures*  
**Alexander Tonkikh**, Victor Tsebro, Ekaterina Obraztsova, Valentina Eremina, Ivan Kondrashov, Esko Kauppinen, Andrey Chuvilin, Elena Obraztsova
- 19:00 - 21:00** (BoA p457) P022  
*Poster* *Aerosol Doping of Single Walled Carbon Nanotubes*  
**Alexey Tsapenko**, Stepan Romanov, Daria Satco, Dmitry Krasnikov, Anastasia Goldt, Anton Anisimov, Albert Nasibulin
- 19:00 - 21:00** (BoA p458) P024  
*Poster* *Influence of CNT's Length on Polymer Based CNT Composites*  
**Shuntaro Tsuchiya**, Toshiyuki Yasuhara
- 19:00 - 21:00** (BoA p459) P026  
*Poster* *Edge Plasmon in Graphene Ribbon*  
**M. Shoufie Ukhtary**, Maruoka Masato, Riichiro Saito
- 19:00 - 21:00** (BoA p460) P028  
*Poster* *a Thermodynamic Study of SC Surfactant Adsorption and SDS Co-Adsorption on SWNT Surfaces*  
**Markus Voelckel**, Ivonne Vollert, Friedrich Schöppler, Tobias Hertel
- 19:00 - 21:00** (BoA p461) P030  
*Poster* *Color of Single-Walled Carbon Nanotubes*  
**Nan Wei**, Ying Tian, Yongping Liao, Qiang Zhang, Aqeel Hussain, Saeed Ahmed, Erxiong Ding, Abu Taher Khan, Fengrui Yao, Kaihui Liu, Hua Jiang, Esko Kauppinen
- 19:00 - 21:00** (BoA p462) P032  
*Poster* *Electrochemical Properties of 3D Graphene Sponge Fabricated From Graphene Oxide*  
**Zizhao Xu**, Chikako Ishiguro, Ahmad Ibadurrahman, Yuta Nishina, Yoshihiro Kobayash
- 19:00 - 21:00** (BoA p463) P034  
*Poster* *Surface-Enhanced Raman Spectroscopy of Individual Single-Walled Carbon Nanotubes*  
**Juan Yang**, Chenmaya Xia, Daqi Zhang, Henan Li, Sheng Li, Haoming Liu, Ruoming Li, Yan Li
- 19:00 - 21:00** (BoA p464) P036  
*Poster* *Nanotube-Based High-Brightness Fluorophores for Flow Cytometry*  
**Yoke Khin Yap**, Nazmiye Yapici, Rodney Oakley, Xiuling Liu, Dongyan Zhang

19:00 - 21:00

(BoA p465) P038

Poster

*Photoluminescence Spectra From Single-Walled Carbon Nanotubes on Hexagonal Boron Nitride*

**Satoshi Yotsumoto**, Tatsuro Ogamoto, Tatsuya Murai, Hayato Arai, Taiki Inoue, Rong Xiang, Shigeo Maruyama, Shohei Chiashi

19:00 - 21:00

(BoA p466) P040

Poster

*High-Efficiency Growth of Single-Wall Carbon Nanotubes With Uniform Structures*

**Feng Zhang**, Xin Li, Chang Liu, Feng Ding

19:00 - 21:00

(BoA p467) P042

Poster

*Electrical Control of Spatial Resolution in Mixed-Dimensional Heterostructured Photodetectors*

**Ke Zhang**, Yang Wei, Kaili Jiang, Shoushan Fan

19:00 - 21:00

(BoA p468) P044

Poster

*Ultralong Carbon Nanotubes: Structures, Synthesis and Properties*

**Rufan Zhang**

17:00 - 18:30

(BoA p469) P045

Poster

*Synthesis And Electrical Properties Of 1D-2D Van Der Waals Heterostructures Via Van Der Waals Epitaxy*

**Boyuan Shen**, Fei Wei

Thursday, 25 July 2019

2D Materials Symposium

17:00 - 18:30

(BoA p470) P047

Poster

*Highly Ordered Metallic Phase of Indium on SiC(0001)*

**Maximilian Bauernfeind**, Jonas Erhardt, Jörg Schäfer, Ralph Claessen

17:00 - 18:30

(BoA p471) P049

Poster

*Optical Characterization of Ion Implanted Monolayer Transition Metal Dichalcogenides*

**Minh Bui**, Jhih-Sian Tu, Manuel Auge, Sven Borghardt, Eoghan O'Connell, Ursel Bangert, Hans Hofsäass, Beata Kardynał

17:00 - 18:30

(BoA p472) P051

Poster

*Hyperelastic Material Models for Graphene and Blue Phosphorus*

**Reza Ghaffari**, Farzad Shirazian, Aningsi Mokhalingam, Shakti Gupta, Ming Hu, Roger Sauer

17:00 - 18:30

(BoA p473) P053

Poster

*Know More About Your 2D Material With Tip-Enhanced Raman Spectroscopy and Photoluminescence Combined With Other Scanning Probe Microscopy Methods*

**Jana Kalbacova**, Marc Chaigneau, Andrey Krayev

**17:00 - 18:30****(BoA p474) P055**

Poster

*Exploring How to Chemically Tune the Properties of Graphene Covered With Hydroxyl and Epoxy Groups From First-Principles Calculations*

**Lara Kühl Teles**, Ivan Guilhon, Marcelo Marques, Friedhelm Bechstedt, Silvana Botti

**17:00 - 18:30****(BoA p475) P057**

Poster

*Optical Gain in Nanographene Molecules and Modulation of Their Optical Properties by Peripheral Substituents*

**Francesco Scotognella**, Giuseppe M. Paternò, Qiang Chen, Xiao\_Ye Wang, Junzhi Liu, Silvia Motti, Annamaria Petrozza, Xinliang Feng, Guglielmo Lanzani, Klaus Müllen, Akimitsu Narita, Francesco Scotognella

**19:00 - 21:00****(BoA p476) P058**

Poster

*Hot Electrons Modulation of Third Harmonic Generation in Graphene*

**Giancarlo Soavi**, Gang Wang, Habib Rostami, Andrea Tomadin, Osman Balci, Ioannis Paradisanos, Eva A. A. Pogna, Giulio Cerullo, Elefterios Lidorikis, Marco Polini, Andrea C. Ferrari

**19:00 - 21:00****(BoA p477) P060**

Poster

*Prediction of Low Temperature Valley Polarization Characteristics in 2D Semiconductors Using Machine-Learning Approach*

**Kenya Tanaka**, Kengo Hachiya, Wenjin Zhang, Kazunari Matsuda, Yuhei Miyauchi

**19:00 - 21:00****(BoA p478) P062**

Poster

*Tunable Electronic and Magneto-Optical Properties of Monolayer Arsenene From GW0 Approximation to Large-Scale Tight-Binding Simulations*

**Jin Yu**, Shengjun Yuan, Mikhail I. Katsnelson

**19:00 - 21:00****(BoA p479) P064**

Poster

*Orientation-Dependent Chiral Raman Response of Two-Dimensional ReS<sub>2</sub>*

**Shishu Zhang**, Lianming Tong, Jin Zhang

**19:00 - 21:00****(BoA p480) P066**

Poster

*Fabrication of Graphene Nanoribbons via Wrinkles in Ultra Clean Graphene*

**Tianfu Zhang**

**19:00 - 21:00****(BoA p481) P068**

Poster

*Flexible Visible-Light-Driven Photoelectrochemical Biosensor Based on Molecularly Imprinted Graphene/TiO<sub>2</sub> Fiber for Ultrasensitive Urea Detection*

**Yongyi Zhang**, Zhengpeng Yang, Tongtong Qin, Chunjing Zhang, Meng Zhu, Qingwen Li

**19:00 - 21:00****(BoA p482) P070**

Poster

*Manipulating Transition-Metal Dichalcogenide Monolayers With Proximity Effects*

**Lanqing Zhou**, Sven Borghardt, Beata Kardynal

Thursday, 25 July 2019

Energy Symposium

19:00 - 21:00

(BoA p483) P072

Poster

*Lightweight High-Performance Cu/Carbon Nanotube Composites as Future Electrical Conductors Substituting Cu***Rajyashree Sundaram**, Guohai Chen, Takeo Yamada, Don Futaba, Kenji Hata, Atsuko Sekiguchi

19:00 - 21:00

(BoA p484) P074

Poster

*Chains of Iron Nanoparticles Decorated on Single-Walled Carbon Nanotubes: Toward the Design of Advanced Electrodes for Electrochemical Energy Devices***Mohammad Tavakkoli**, Yongping Liao, Esko Kauppinen

19:00 - 21:00

(BoA p485) P076

Poster

*High Frequency-High Response Rate- Large Stroke Electrochemically Driven Pure Carbon Nanotube Artificial Muscle Yarns***Yulian Wang**, Jiangtao Di

19:00 - 21:00

(BoA p486) P078

Poster

*Hybridizing Fullerenes and Two-Dimensional Nanomaterials***Shangfeng Yang**

19:00 - 21:00

(BoA p487) P080

Poster

*Carbon Nanotube Based Pt Catalysts for Selective Oxidation of Biomass-Derived Polyols***Xueqiong Zhang**, Haibin Chu, Jian Zhou, Suohong Bai



# Program Friday

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## Introducing neaSNOM

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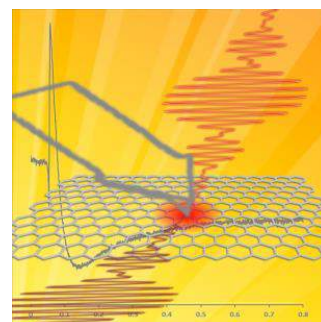
### Chemical nano-identification

Molecular spectroscopy  
@ 10 nm resolution



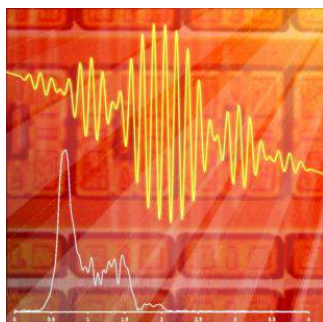
### Synchrotron nano-spectroscopy

Ultrabroadband nano-FTIR spectroscopy



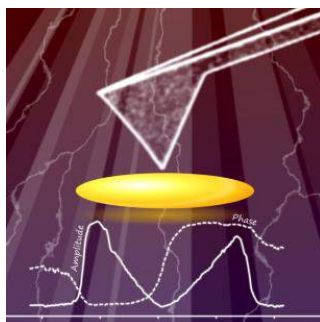
### Ultrafast nano-spectroscopy

Pump-probe spectroscopy  
@ 10 nm resolution



### Terahertz nano-spectroscopy

THz imaging and spectroscopy  $< \lambda/20000$



### Nano-plasmonics & photonics

Real-space vector-field mapping



### Cryogenic nanoscopy

near-field microscopy  
@  $< 10$  K

## Plenary program

Franconia Hall

## Session PI9

Chair: Yutaka Ohno

08:30 - 09:15

K5

**Christophe Voisin** (École Normale Supérieure)  
*Carbon Nano-Structures as Quantum-Light Sources*

09:15 - 09:40

I15

**Suguru Noda** (Waseda University)  
*Production and Functionalization of Carbon Nanotubes for Electrochemical Energy Storage Devices*

09:40 - 10:05

C11

**Daniel A. Heller** (Memorial Sloan Kettering Cancer Center)  
*Carbon Nanotube Photoluminescence Solvatochromism in Biomedicine*

Coffee break

CCW Lobby

## Session PI10

Chair: Daniel A. Heller

10:35 - 11:00

C12

**Yoshiyuki Miyamoto** (AIST)  
*Nanotubes as Laser-Field Enhancer Useful for Water Decomposition: a TDDFT Study*

11:00 - 11:25

I16

**Yutaka Ohno** (Nagoya University)  
*Carbon Nanotube-Based Stretchable Devices for Wearable Electronics*

11:25 - 11:50

C13

**Carola Meyer** (Universität Osnabrück)  
*Monitoring Singlet Transitions in Individual Molecules*

## Closing Session

Chair: Tobias Hertel

11:50 - 12:15

**Annick Loiseau, Shigeo Maruyama**  
*Poster Awards and Closing Remarks*

Farewell

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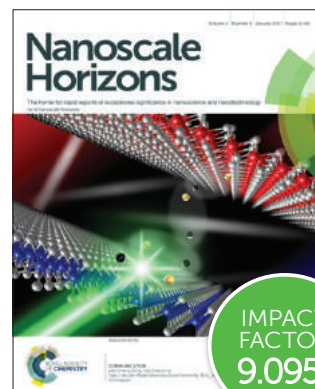
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## Overview of Friday's oral presentations

Friday, 26 July 2019

Plenary Venue

**08:30 - 09:15**

**(BoA p494) Franconia Hall**

*K5 (Keynote)*

*Carbon Nano-Structures as Quantum-Light Sources*

**Christophe Voisin**

**09:15 - 09:40**

**(BoA p495) Franconia Hall**

*I15 (Invited)*

*Production and Functionalization of Carbon Nanotubes for Electrochemical Energy Storage Devices*

**Suguru Noda**

**09:40 - 10:05**

**(BoA p496) Franconia Hall**

*C11 (Contributed)*

*Carbon Nanotube Photoluminescence Solvatochromism in Biomedicine*

**Daniel Heller**

**10:35 - 11:00**

**(BoA p497) Franconia Hall**

*C12 (Contributed)*

*Nanotubes as Laser-Field Enhancer Useful for Water Decomposition: a TDDFT Study*

**Yoshiyuki Miyamoto**, Hong Zhang, Xinlu Cheng, Angel Rubio

**11:25 - 11:50**

**(BoA p498) Franconia Hall**

*I16 (Invited)*

*Carbon Nanotube-Based Stretchable Devices for Wearable Electronics*

**Yutaka Ohno**

**11:00 - 11:25**

**(BoA p499) Franconia Hall**

*C13 (Contributed)*

*Monitoring Singlet Transitions in Individual Molecules*

**Carola Meyer**, Claire Besson, Philipp Stegmann, Michael Schnee, Zeila Zanolli, Asmus Vierck, Robert Frielinghaus, Paul Kögerler, Janina Maultzsch, Claus M. Schneider, Alfred Hucht, Jürgen König Abstracts Friday



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