

P098**Tu 19:00 - 21:00****Realizing Ultralow Concentration Gelation of Graphene Oxide****Chong Luo**¹, Wei Lv¹, Quan-Hong Yang²¹*Engineering Laboratory for Functionalized Carbon Materials, Graduate School at Shenzhen, Tsinghua University, Shenzhen, 518055, China*²*State Key Laboratory of Chemical Engineering, School of Chemical Engineering and Technology, Tianjin University, Tianjin, 300072, China*

Understanding the chemistry in the interfacial assembly of graphene oxide (GO) is very essential for the practical uses of graphene-based materials. Herein, with the designed artificial interfaces due to the introduction of water-miscible isopropanol, the gelation of GO has been realized in water at an ultralow concentration (0.1 mg mL⁻¹, the lowest ever-reported) with a solvothermal treatment. Intrinsically, with lower intercalation energy, water shows much stronger attraction with GO than the isopropanol case, where GO sheets prefer to be surrounded by water molecules. A microphase separation was induced in the miscible mixture of isopropanol and water and generated liquid-liquid interfaces. In the solvothermal process, the partially reduced GO sheets interact with each other along the water-isopropanol interface and assemble into interconnected frameworks. The threshold for the GO gelation concentration is dependent upon the water fraction in the mixture and water acts as spacers to facilitate the gelation and final control of the resulting materials microstructure. This study enriches interface/gelation chemistry of GO and indicates a practical way for precise structural control and scale-up preparation of graphene-based materials.