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Expertise : Soft material, Polymer, Inorganic chemistry

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Reserch Theme in This Project :

The synthesis of inorganic/organic nanocomposite gels for molecular robotics.

Main Research Results, Publications :

■ Synthesis of inorganic/polymer nanocomposites:

• Macromol. Rapid Commun. 35, 1741, (2014). "Anomalous Thermo- and Photo-Responsive Anisotropic Deformation of Poly(N-Isopropylacrylamide) Gel Hybridized with Liquid Crystalline Inorganic Nanosheets Aligned by Electric Field"

• Chem. Commun. 49, 1082, (2013). "Liquid Crystalline Inorganic Nanosheets for Facile Synthesis of Polymer Hydrogels with Anisotropies in Optical Property, Structure, Swelling/Deswelling, and Ion Transport/Fixation"

■ Synthesis and application of inorganic nanosheet liquid crystals:

• Angew Chem Int Ed 54, 4222, (2015). "Polymeric Micelle Assembly with Inorganic Nanosheets for Construction of Mesoporous Architectures with Crystallized Walls"

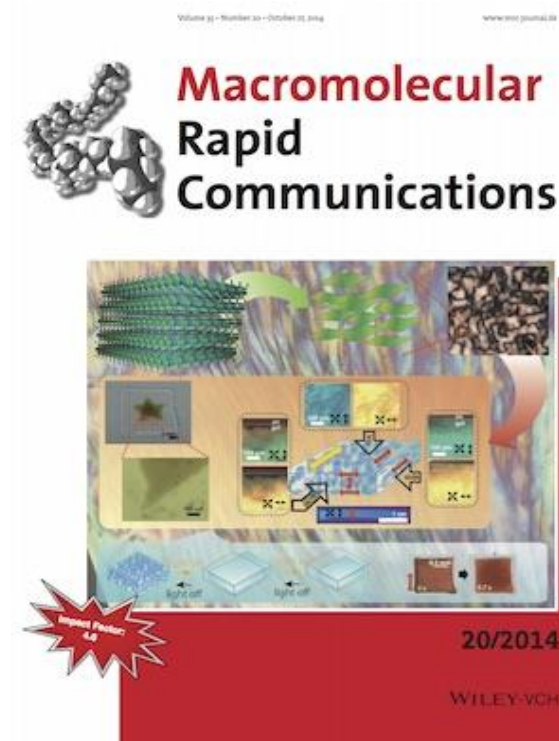
• Nature Commun. 4: 1632, (2013). "Reversible, Instant, and Unusually Stable ~100-Fold Swelling of Inorganic Layered Materials"

• Adv. Mater. 14, 1267, (2002). "Liquid Crystalline Nature of  $K_4Nb_6O_{17}$  Nanosheet Sols and Their Macroscopic Alignment"

■ Structural analyses of soft materials with small angle neutron/X-ray scattering: • Phys. Rev. E. 85, 011403, (2012). "Aspect Ratio Dependent Phase Transitions and Concentration Fluctuations in Aqueous Colloidal Dispersions of Charged Plate-Like Particles"

■ Synthesis of layered inorganic/organic nanocomposites with photofunctions:

• J. Am. Chem. Soc. 123, 6949, (2001). "Uni-Directional Orientation of Cyanine Dye Aggregates on a  $K_4Nb_6O_{17}$  Single Crystal : Toward Novel Supramolecular Assemblies with Three-Dimensional Anisotropy"



Recent Activities (hobbies, etc.): I am a president of west japan nanosheet society. I like to enjoy singing jazz music and skiing.