

**Speaker: Dr. Joonwoo Jeong**

**Time: 3:30 pm – 4:30 pm**

**Location: Marcus Nanotechnology 1116-1118**

**Title:** Seeing the unseen in soft matter: From topological defects to phase separation

**Abstract:** Soft matter, condensed matter with large response functions to external stimuli, is of great importance in natural systems and technological applications. Liquid crystal (LC), one of the textbook soft matter, is the core material of our Digital Age which still amazes us with new findings and applications. In this talk, I will introduce a series of LC-based systems under microscopy to see how the partial order of LCs gives rise to novel phenomena in a wide range of materials problems. First, I will show the confined LCs having unique elastic properties manifest unexplored topological aspects of chiral materials. In the second part, pulsating bubbles dispersed in LC reveal a critical role of spatiotemporal symmetry breaking of the anisotropic medium in the bubbles' propulsion. Extending this problem, we adopt motile bacteria in LC to study how bacteria interact with liquid-liquid interfaces. Lastly, unveiling skin formation in drying deposits of aqueous LCs and solutions, I will share my vision for future soft matter research utilizing X-ray/neutron radiography.

**Bio:** Joonwoo Jeong is currently an associate professor in the Department of Physics at UNIST (Ulsan National Institute of Science and Technology), Korea. He obtained his Ph.D. in Physics at KAIST (Korea Advanced Institute of Science and Technology), studying the effect of external fields on soft matter systems ranging from liquid crystals to colloids and polymers. Then, he pursued his postdoctoral research at the University of Pennsylvania from 2012 to 2014, pioneering the field of water-loving chromonic materials. Since he joined UNIST in 2015 as the principal investigator of the Experimental Soft Matter Physics Lab (SOPHY), he has expanded his research area into radiography for soft matter and statistical physics with active matter, such as lab-grown bacteria.