第10回精密無機材料化学研究セミナー

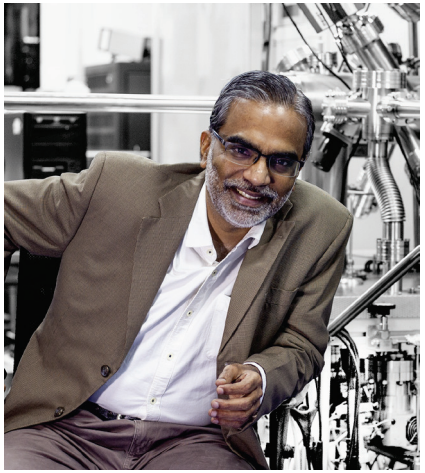
演題　The Unfinished Science of Water Across Length Scales: From Clean Water to Microdroplets and Ice

講師　Thalappil Pradeep (IIT Madras)

日時　2026年11月5日(木) 13:00～14:30

場所　素材棟2号館 5階 共同セミナー室2（504）

主催　多元物質科学研究所 精密無機材料化学研究部門



講演内容

Water continues to inspire new directions in science and technology. This lecture explores how fundamental insights into water are enabling sustainable chemistry across length scales. First, nanomaterials developed for affordable drinking-water purification will be introduced, including technologies that selectively remove contaminants such as arsenic, iron, and uranium. The talk will then turn to charged water microdroplets as highly active chemical reactors. Recent studies show that minerals such as quartz and ruby can disintegrate into nanoparticles within milliseconds through electric fields, reactive species, and mechanical forces—an effect termed microdroplet mechanochemistry. Finally, emerging insights into the physics and chemistry of ice will be discussed, highlighting the potential of water interfaces, confinement, and ambient processes for sustainable materials synthesis and manufacturing.

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