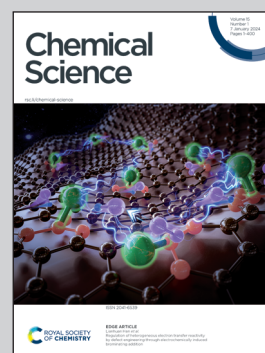


Showcasing research from Professor Abhijit Patra's laboratory, Department of Chemistry, Indian Institute of Science Education and Research Bhopal (IISERB), Madhya Pradesh, India.

Unveiling autophagy and aging through time-resolved imaging of lysosomal polarity with a delayed fluorescent emitter

A lysosome-specific coumarin-diphenylamine-based thermally activated delayed fluorescent probe, DC-Lyso, exhibiting a polarity-sensitive fluorescence lifetime has been developed. It was employed for the specific long-term tracking of lysosomal dynamics, including lysosome-mitochondrion and lysosome-lipid droplet interactions under physiological conditions. The microsecond timescale imaging using the delayed fluorescence of DC-Lyso nanoparticles in water further reveals the distribution of lysosomal polarity in various cancerous cell lines and a model organism, *Caenorhabditis elegans*. The lysosomal polarity has been elucidated as an indicator of the complex aging process in a multicellular organism, *C. elegans*.

As featured in:



See Abhijit Patra *et al.*,
Chem. Sci., 2024, 15, 102.