SEMINAR: Investigating "Superfluorescent" Perovskites with Transient Absorption and Diffraction

DMITRY BARANOV

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16:30 to 17:30
Seminar Room

ABSTRACT:
Thin films of lead halide perovskites find applications in photovoltaics, photodetection, and other areas of optoelectronics. One interesting direction focuses on photoluminescent films that exhibit energy transfer and light amplification such as amplified spontaneous emission, lasing, and superfluorescence. Hybrid lead halide perovskite thin films such as methylammonium lead iodide (MAPI) and mixed-dimensionality 2D-3D phenethylammonium cesium lead bromide (PEA:Cs)PbBr3 are popular materials for such studies. Given the dynamic nature of metal halides, correlating spectroscopic observables with structural changes on comparable time scales important for understanding mechanisms of light amplification and for engineer these materials for optimal performance. In this talk, I will discuss our efforts to correlate ultrafast transient absorption with time-resolved diffraction of MAPI and (PEA:Cs)PbBr3 thin films at 77 K and high excitation conditions.

BIO:
Dmitry Baranov is an Assistant Professor at the Department of Chemistry, Lund University, Sweden, where he leads the Nanochemistry and Spectroscopy Group. Supported by Horizon Europe and Swedish Research Council grants, his research focuses on the chemical synthesis, self-assembly, and collective properties in nanomaterials. He has authored more than 50 research articles and several reviews, and serves on the Early Career Board of Nano Letters. Dmitry is a member of the Swedish Chemical Society and the Chemical Society in Lund, and is active in outreach, engaging students in nanoscience through lectures and demonstrations.

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Hosted by: Prof. Dr. Niek van Hulst