



NECEM WEBINAR: Towards Stable Perovskite Solar Cells and LEDs

Dr Bruno Ehrler, AMOLF in Amsterdam

Wednesday 24th June 2020, 2-3 pm (UK)

Via Zoom email: justina.heslop@newcastle.ac.uk to join.

Metal halide perovskite semiconductors have shown astonishing properties, despite cheap and easy processing. This unprecedented combination has lead to enormous research efforts around the globe, yielding the first products after only a decade of R&D. Now one of the largest barriers to large-scale commercialization of perovskite solar cells and LEDs is the long-term stability of these devices.

Perovskite semiconductors are made from salt crystals, where the bonds between the atoms are ionic bonds. These are weaker than the covalent bonds that hold silicon atoms together, and hence the ions in perovskite semiconductors are mobile under operation. I will discuss the implication of the ion mobility on the stability of the devices, and demonstrate how we can measure properties of the ion migration. Finally I show a few strategies that can suppress ion migration and could hence lead to devices stable for 20+ years.



Biography

Bruno Ehrler is leading the Hybrid Solar Cells group at AMOLF since 2014. The group focuses on singlet fission and perovskite solar cells, both on the fundamental level, and for device applications. Before moving to Amsterdam, he was a research fellow in the Optoelectronics Group at Cambridge University following post-doctoral work with Professor Sir Richard Friend. He obtained his PhD from the University of Cambridge under the supervision of Professor Neil Greenham, studying hybrid solar cells from organic semiconductors and inorganic quantum dots.