

CONDENSED MATTER SEMINAR

Thursday 16 November at 14:30

Simpkins Lee room

“Powering the IoT with perovskite solar cells fabricated over large-areas”

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Perovskite-based solar cell (PSC) technology is undisputedly the rising star among many other photovoltaic (PV) contenders today. This status is hard-earned, well-deserved and owed to the tremendous developments and achievements made during the last decades with a focus on improved efficiency, stability, and sustainability. All of this whilst reducing the carbon footprint. The potential of reaching the net-zero climate change target with PSCs appears more possible today due to the lower Watt-peak price of generated electricity compared to traditional inorganic PVs. To achieve this lower Watt-price goal, a mass-production of large-area PSC-based PV panels must be facilitated. However, most of the research in academia still concentrates on the fabrication of PSCs by using non-scalable deposition techniques such as spin-coating that share little similarities with industry related fabrication processes.

In this talk we will elucidate the challenges associated with scaling-up of the fabrication of PSCs and give examples of successful transfer of small-area device fabrication methods to large-area deposition techniques compatible with industry standards. Successful development and characterisation of novel green perovskite precursors will be shown, and the fabrication of PSCs-based single devices and mini-modules demonstrated. Additionally, an extrapolation of the measured device characteristics will show the possibility for using PSCs as an energy source allowing for powering the IoT including small autonomous systems.

Host: Nicky Evans