

## **Photovoltaics for indoor light harvesting: progress, challenges and perspectives**

Giulia Lucarelli<sup>1\*</sup>, Thomas M. Brown<sup>1</sup>

<sup>1</sup> *CHOSE (Centre for Hybrid and Organic Solar Energy), Department of Electronic Engineering, University of Rome Tor Vergata, Via del Politecnico 1, 00133 Rome, Italy*

The Internet of Things revolution requires a low-cost, stable and efficient power source to allow autonomous operation of smart objects and wireless sensors even at very low lighting levels. Indoor photovoltaics (PV) has the potential to fulfil these requirements. Whereas crystalline silicon dominates the outdoor PV market, amorphous silicon is more suited for products used in buildings, where intensities and spectra of the light sources differ greatly from those of the sun. In recent years, there has been a remarkable rise in the research and development of new generation PV cells, i.e. organic, dye-sensitized and perovskite cells, which have surpassed the 30% power conversion efficiency threshold. We provide an overview of indoor PV technologies, highlighting the progress achieved and the strategies to design highly efficient cells, as well as the issues to be resolved for this field to continue to prosper.