

7th World Congress and Expo on **Green Energy**

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3rd World Congress on **Wind & Renewable Energy**

June 24-25, 2019 Barcelona, Spain

Inkjet Printing of Perovskite Solar Cells - Challenges to Solutions

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Inkjet printing is an excellent fabrication method for depositing multiple materials alongside each other due to its nature of being a droplet on demand disposition technique. This allows for printing high resolution features with including sub-micron thick films with near-zero material waste. These features highlight the suitability of inkjet printing for depositing perovskite materials in order to fully fabricate perovskite solar cells in one process. This aim comes with challenges of the rheology to enable stable jetting mechanism as well as the pre and post processing conditions in terms of substrate wettability and the temperatures required to solidify the jetted inks in order to form complete solar cells. This talk will lay down these challenges and show an optimised solution process to overcome the challenges.

Biography

For the past ten years Ehab has worked on developing digital manufacturing technologies for fabricating integrated structures using multi-materials, which include metals, polymers and glasses. Ehab graduated with a PhD degree from the Optoelectronics Research Centre (ORC) at the University of Southampton, and gained a First Class BEng degree from Brighton University in Digital Electronics Computing and Communications. Before joining the University of Leeds at the future manufacturing processes research group Ehab worked at the centre for additive manufacturing (CfAM) at Nottingham university where he worked on developing multi-material 3D printed structures using various additive manufacturing processes.