

Printable chalcopyrite CIGS thin film solar cells

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Abstract

Capturing a 1.5% market share among thin-film technologies, Copper Indium Gallium diselenide Solar Cells (CIGSSC's) have made a distinctive mark. The bottleneck of CIGSSC's emerging disruptive photovoltaic technology is the scalability and cost towards manufacturing of CIGS absorber layer that needs to be addressed. The dynamically evolving research into non-vacuum approaches, especially on the drop on demand-based inkjet printing technology for the preparation of CIGS absorber layer, has paved the way for this. This talk would cover a unique outlook on key strategies for fabricating the CIGS absorber film using a combination of ink and inkjet printing technique. In this connection, a inclusive overview covering various research and technological aspects of the inkjet printing technique for preparation of CIGS thin film solar cells will be discussed. The minute details starting from substrate preparation, ink formulation, printing to post-annealing associated with the inkjet process is covered. Moreover, fabrication process to scale up the lab based CIGS devices to mini module level is also included in this talk. Considering the techno commercial benefits and industrial application of inkjet printing technique in electronics and other areas, it has high potential in printable CIGS based photovoltaic technology.

Biography

Brijesh Singh Yadav, a material specialist/technologist, associated with saule technologies which is situated at Wroclaw, Poland. Currently, he is working in the area of inkjet printable flexible perovskite thin film solar cells. He completed his PhD in Material Science and Metallurgical Engineering from IIT Hyderabad in 2020, India. His research area was inkjet printing of CuInGSe₂ absorber layer for solar

cell application. He has published more than eight apublications in the reputed international journal as a first author and also presented his work in renowned international conferences. For his doctoral work, he has awarded by the prestigious AWSAR (Augmenting Writing Skills for Articulating Research) award 2020 by Gov of India and excellence research award-2021 by IIT Hyderabad.