

HIGH-SPEED PEROVSKITE LED FABRICATION BY INKJET PRINTING

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Technology Description

Researchers in Chuan Wang's lab at Washington University have developed a method of fabricating perovskite LEDs (PeLEDs) directly on an elastic substrate more than 10X faster than existing methods. Each layer of the PeLED is patterned using a highly scalable inkjet printing process. These printed PeLEDs have a four-layer structure (bottom electrode, perovskite emissive layer, buffer layer, top electrode) without separate electron or hole transporting layers.

Stage of Research

The researchers have produced these flexible PeLEDs with excellent robustness and stability even when bent to a curvature radius of 2.5 mm. They have also achieved a turn-on voltage of 3.46 V, max luminance intensity of 10227 cd/m², and max current efficiency of 2.01 cd/A when printed in ambient conditions.

Publications

- Zhao J, Lo L-W, Wan H, Mao P, Yu Z, Wang C. (2021). [High-speed fabrication of all-inkjet-printed organometallic halide perovskite light-emitting diodes on elastic substrates](#). *Advanced Materials*, 33(48): 2102095.

Applications

- Fabrication of flexible perovskite LEDs (PeLEDs) for foldable displays, smart wearables, etc.

Key Advantages

- Reduces fabrication time by 10X
- Highly scalable

Patents: Pending

Related Web Links: Wang [Profile](#) & [Lab](#)