

Precision design and control of a flexure-based (multi-layer) roll-to-roll printing system

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Aim

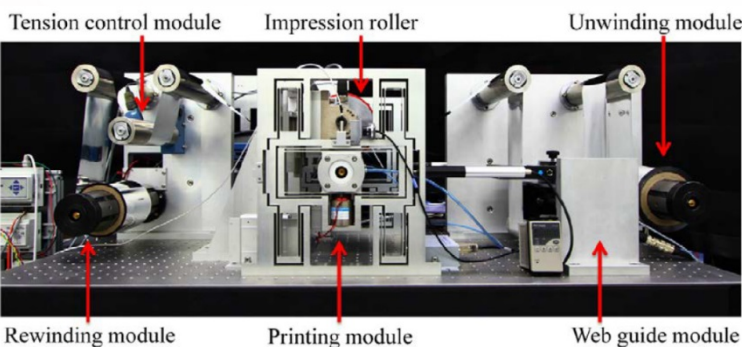
- To provide a scalable precision multi-layer roll-to-roll (R2R) printing system to fabricate photoelectronic devices.

Features

- Use of a modified Microcontact Printing (MCP) technique

Advantages

- High throughput, high resolution (~85% transparent metal grids) and repeatability
- Multiple Degree of Freedom misalignment correction
- Real time contact pressure monitor
- High layer-to-layer overlay accuracy

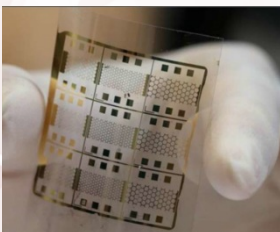


Related Patent

- US14/057,320

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▲ (UPPER-LEFT) Prototype of the flexure-based multi-layer R2R printing system. Each printing module consists of an impression roller, affixed to a coarse Z-stage, and a print roller, guided by a five-axis compliant positioner, which actively adjusts the position of the print roller to ensure the two rollers are always aligned and both marks in the print roller and web are always aligned.

◀ (RIGHT) R2R printed gold electrodes on flexible substrate (PET web)