



Rapid Thermal Processing of Back Contacts for Cadmium Telluride Solar Cells

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Summary: A high-throughput method to produce back contacts for cadmium telluride (CdTe) solar cells that improves the cell's properties

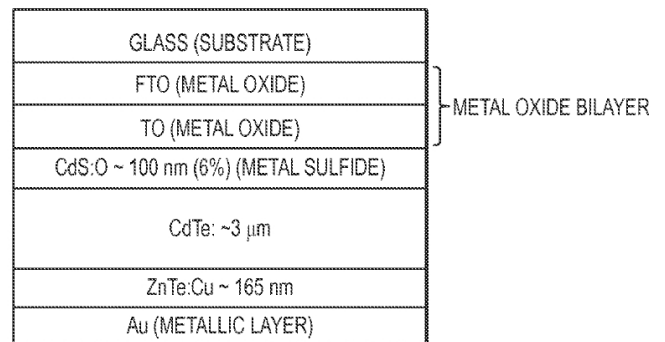
Description: Cadmium telluride (CdTe) solar cells on ultra-thin glass substrates are light and flexible. These traits can enable new applications that require high specific power, unique form factors, and low manufacturing costs. This invention relates to a simple, high throughput approach for producing electrical back contacts to CdTe solar cells. In this method, the deposition and activation steps of a copper-doped zinc telluride back buffer layer (ZnTe:Cu) are decoupled; the buffer and metallization layers are first deposited by evaporation at low temperature followed by rapid thermal processing (RTP) to precisely control the activation. The process is fast (< 1 min.) and offers a significant reduction in thermal budget over conventional techniques. The technique offers unique tools to control the redistribution of elements within the back contact, resulting in enhanced device efficiency through improvements in the fill factor, open circuit voltage, and reproducibility.

Main Advantages of this Invention

- Significant reduction in thermal concerns
- Simple, high yield process
- Can be applied to multiple device architectures

Potential Areas of Application

- Solar energy
- Thermally sensitive materials
- Small electronics



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Intellectual Property Status: US utility patent pending (application 14/706,814)

Publications: J. Li *et al.* *Sol. Energ. Mat. Sol. C.*, 2015, 133, 208-215. (Available upon request.)

Opportunity: We are seeking an exclusive or non-exclusive licensee for implementation of this technology.

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