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Filling Pin Holes, Weak Shunts, and Scribe Lines of Photovoltaic Devices

During the fabrication of semiconductor devices, undesirable and detrimental holes or scribe lines are often created through the layers of the device. These structural defects often expose the transparent conductor layer and when the final metal layer is applied an electrical contact called a shunt is created between the metal electrode and the transparent electrode. The presence of various undesirable structural defects and nonuniformities are inherent in such device configurations and leads to an overall decrease in the efficiency of the semiconductor device. Therefore, a system has been developed to selectively fill any structural defects and nonuniformities with an insulator material or with a material of poor electrical conductivity prior to fabrication of the metal layer. With structural defects and nonuniformities thus selectively filled, the metal electrode can be applied and the material filling the hole prevents electrical contact between the metal electrode and the transparent electrode.

The University of Toledo is seeking a company interested in utilizing this system for selectively filling undesirable structural nonuniformities and holes exposing the transparent conductor layer to increase efficiency of the semiconductor device.

Applications:

1. Thin film semiconductor devices
2. Photovoltaics
3. Active matrix liquid crystal displays
4. light emitting devices

Advantages:

1. Increased panel wattage
2. Increased productivity with higher yields
3. Reduction of scrap
4. Improved panel electrical uniformity and stability

This invention is patent pending

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