

WEAK-LINK CAPACITOR FOR BUILT-IN SAFETY

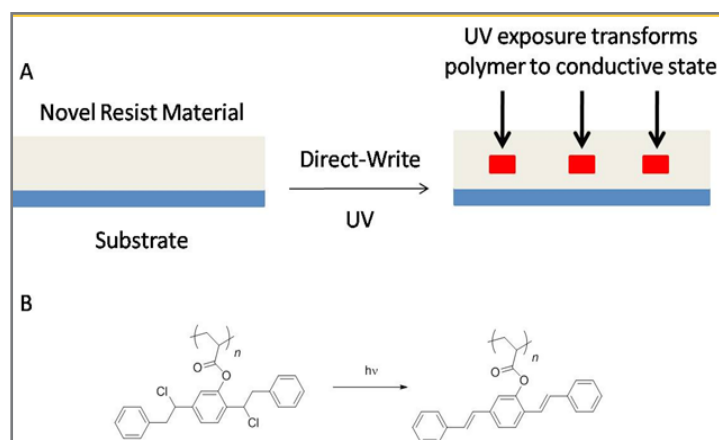
US Pat. No.: 7,955,945

Technology Readiness Level: 5

Key components have been tested in relevant environments

Safety is often a major concern in high voltage electronics and energy applications containing capacitors. In the event of a fire or overheating, disabling the capacitor becomes extremely important in order to minimize damage from occurring to both the rest of the system and nearby personnel.

Sandia has developed a novel method to produce a thin-film stacked capacitor, utilizing readily available precursor polymers which contain leaving groups that can be converted to conducting or semiconducting polymers upon being energized. The temperature range at which the polymer will transform can be designed depending on the leaving group chosen. Because this technique allows for a two separate photo-activated functional groups to be polymerized at separate times and locations, patterning of the semiconducting or conducting polymer is simple.



TECHNICAL BENEFITS

- Fundamental safety—avoid uncontrolled discharge due to fire or overheating
- Easy to set failure temperature—failure temperature chosen based on leaving group

INDUSTRIES & APPLICATIONS

- Semiconductor manufacturing
- Medical devices
- Textiles
- Microelectronics