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RESISTIVE SWITCHING IN AG/CS+PVP+CDTE/CDSE/ITO-PET DEVICE FOR APPLICATION IN ECO-FRIENDLY MEMORY DEVICE

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Electronic devices that are made primarily of organic materials are significant for reducing electronic waste. The resistive switching properties of a chitosan/polyvinylpyrrolidone (PVP) polymer blend dispersed with CdTe/CdSe core-shell quantum dots are investigated. Both chitosan and polyvinylpyrrolidone (PVP) are non-hazardous to the environment. This composite was employed in the active layer of a resistive switching memory (ReRAM), which employs silver and indium doped tin oxide electrodes. The device's electrical characterisation indicated that it had asymmetric "S-type" memory behavior with a I_{ON}/I_{OFF} ratio of ≥ 10 and a very low (0.2 V) working voltage, making it suitable for low power consumption device applications. Furthermore, the presence of CdTe/CdSe in the composite was thought to enhance the Schottky barrier height of the interface between the electrodes and the active layer, resulting in the creation of conductive filaments due to silver electrode diffusion into the active layer. Overall, our findings suggest that by including CdTe/CdSe QDs, the memory and switching behavior of the chitosan/PVP blend-based resistive switching memory may be utilized.

Apply to be considered for a student ; award (Yes / No)?

YES

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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