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Fabrication of Flexible Au/ZnO/ITO/PET Memristor Using Dilute Electrodeposition Method (Conference Paper)

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Abstract

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DRAM has been approaching its maximum physical limit due to the demand of smaller size and higher capacity memory resistor. The researchers have discovered the abilities of a memristor, a Non Volatile Memory (NVM) that could overcome the size and capacity obstacles. This paper discussed about the deposition of zinc oxide (ZnO) on indium tin oxide (ITO) coated polyethylene terephthalate (PET) substrate by electrodeposition. Metallic Zn film was deposited on substrates with varying deposition time from 15 to 120 seconds in very dilute zinc chloride (ZnCl₂) aqueous and subsequently oxidized at 150 °C to form ZnO/ITO coated PET junction. The deposited thin film was characterized via x-ray diffraction (XRD) and field emission scanning electron microscopy (FESEM). The results from I-V measurement show the deposited ZnO exhibits pinched hysteresis loop. The hysteresis loop becomes smaller with increasing deposition time. The 15 seconds electrodeposition gave the largest hysteresis loop and largest value of resistive switching ratio of 1.067. The result of the synthesized ZnO on the flexible substrate can be one of the alternatives to replace the current memory system as the flexible memory system. © Published under licence by IOP Publishing Ltd.

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 Scanning electron microscopy Thermoelectric equipment Tin oxides X ray diffraction
 Zinc Zinc chloride Zinc oxide

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