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## Resistive Switching property of Cow Milk dispersed with Selenium particles.

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Scientists are intrigued by the phenomenon of resistive switching in organic materials because of its potential for designing devices with reduced electronic waste footprint. We improved the resistive switching property of organic cow milk films in this study by introducing selenium (Se) particles. We built and tested four devices, each with a different mass per volume % of Se in milk: Ag/milk+Se (0.4)/ITO-PET, Ag/milk+Se (0.8)/ITO-PET, Ag/milk+Se (1.2)/ITO-PET, and Ag/milk+Se (1.6)/ITO-PET. The resistive switching behaviour of these devices was evaluated. These devices all have distinct current-voltage (I-V) characteristics. The Ag/milk+Se (0.4)/ITO-PET system's I-V hysteresis was found to be weak. Each voltage scan cycle changed the hysteresis properties. The Ag/milk+Se (0.6)/ITO-PET device demonstrated consistent hysteresis, but with substantial signal noise. The Ag/milk+Se (1.2)/ITO-PET device demonstrated consistent hysteresis and decreased noise levels. Before any noise was detected, the hysteresis remained steady for more than 15 cycles. The Ag/milk+Se (1.6)/ITO-PET system had very little hysteresis. This device's behavior was observed to display random variations in current, with no evidence of hysteresis or memory effects. The electron hopping between Se particles is the most likely process, according to the conduction mechanism analysis of Ag/milk+Se(1.2)/ITO-PET.

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

Yes

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

MSc

**Primary authors:** Mr NTSHAKAZA, Sonwabile (School of Computing, University of South Africa); Dr DLAMINI, Zolile Wiseman; Dr VALLABHAPURAPU, Sreedevi; Dr VALLABHAPURAPU, Vijaya Srinivasu

**Presenter:** Mr NTSHAKAZA, Sonwabile (School of Computing, University of South Africa)

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