Electrical Switching Behaviour of Organic Molecules assembled onto Ultrathin Films

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In this lecture introduction about the research activities going on at our laboratory will be presented with a special emphasis on our ongoing work on electrical switching behavior of organic molecules assembled onto thin films.

In recent years, switching behavior of organic molecules have made them an essential candidate for making organic resistive memory devices in which active organic materials possess at least two stable resistance states. Their exceptional electrical performances such as a nondestructive reading process, nonvolatility, a high ON/OFF ratio, and a fast switching speed meet the requirements for viable memory technologies.

It has been observed that amido-phenazine derivative showed WORM and RRAM behavior, whereas, imidazole derivatives & porphyrin derivative (MnTPPS) showed both threshold and bipolar switching onto ultrathin films based on device fabrication condition as well as measurement protocol [1-3].

References:

1. Electrical switching behaviour of a metalloporphyrin in Langmuir-Blodgett film
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2. Composition-dependent nanoelectronics of amido-phenazines: non-volatile RRAM and WORM memory devices
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3. Study of Compression Induced Supramolecular Nanostructures of an Imidazole Derivative by Langmuir-Blodgett Technique
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