

Fused Pyrrole Core: A New Class of Quadrupolar Organic Moieties as Potential Resistive Memory Elements

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A series of 1,4-Dihydro pyrrole[3,2,b]pyrroles derivatives were synthesized to elucidate their structure-property relationship and evaluate their feasibility as resistive memory elements. Smart structural modifications through judicious choice of functional groups was carried out to establish a rationale between molecular framework in a quadrupolar A- π -D- π -A configuration and its influence on the electronic and opto-electronic properties. The electrical switching characteristics of these materials have been evaluated by embedding them in a two-terminal metal-insulator-metal configuration and the results confirm that, the materials can mimic the functions of a permanent, rewriteable *flash* and dynamic-random access memories, which are expected to fulfil the requirements for low-cost flexible information storage applications.

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