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## Chalcogenide materials screening for Ovonic Threshold Switching

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The world need for data storage and processing is increasing at a rapid pace. A response to this societal demand could come from ovonic threshold switches based on chalcogenide materials, which are leading candidates for emerging resistive memory technologies and neuro-inspired computing technologies.

Ovonic threshold switching (OTS) is a volatile non-linear electrical characteristic observed in some amorphous chalcogenide materials. A material switches from a high resistive state (HRS) to a low resistive state (LRS) when applying a voltage that exceeds its threshold voltage. It remains in the LRS state as long as a minimum holding voltage is maintained, otherwise it switches in HRS.

Here [1], we have developed a chalcogenide materials map to screen for new Te-based OTS materials. The main properties used for developing the map were the average number of p-electrons and the bond-orbital coordinates namely hybridization and ionicity. Also, a glass transition temperature ($T_g$) model was developed and employed to filter potential thermally stable compositions.

Promising candidates for thermally stable ternary OTS materials are predicted. We observe that there is a trade-off to be made between thermal stability and good OTS behavior when selecting a material depending on the targeted application.

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