Electrical properties of vanadium dioxide devices for micro-electronic applications making use of metal-insulator phase transitions\(^1\)

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— In principle the metal-to-insulator transition offers prospects for use in an electronic switch. This study investigates the properties of VO\(_2\) test devices to evaluate VO\(_2\)’s potential use in micro-electronic applications such as a memory, two-terminal selector or transistor device. Vanadium dioxide thin films were produced by thermal oxidation of vanadium and the physical properties of these layers were investigated. Electrical properties of concentric two-terminal vanadium dioxide structures will be discussed such as current-voltage behavior, switching behavior and contact formation to VO\(_2\) with different metals and implications such as Fermi-level pinning and Schottky-type behavior for different metals.

\(^1\)The FWO is acknowledged.

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Date submitted: 10 Dec 2010
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