Electric field-induced breakdown of the Mott insulating state in V2O3 nanostructures — The origin of the electric field-induced breakdown of the Mott insulating state in vanadium sesquioxide (V2O3) nanostructures is of considerable interest. We have prepared high quality, epitaxial films of V2O3 on (0001)-oriented sapphire substrates by oxygen plasma-assisted thermal evaporation. Lateral, two-terminal nanostructures were patterned by electron beam lithography. The nanostructures displayed strong metal-to-insulator transitions upon cooling to below \( \sim 150\)K. Modest voltages applied across the devices drive the films into a conducting state. We discuss the role of temperature, applied voltage, device size, and potential Joule heating effects on the switching process, as well as implications for the underlying mechanism involved.