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Time resolved measurements for voltage induced metal-insulator-transition in VO_2 nanostructures LI GAO, XIN JIANG, SEE-HUN YANG, MASAMITSU HAYASHI[1], RAI MORIYA[2], STUART S. P. PARKIN, IBM Research Division, Almaden Research Center, San Jose, California 95120 — The metal-insulator-transition (MIT) induced by applying a voltage laterally across vanadium oxide nanostructures with a size of a few 100 nm are studied using time resolved measurement techniques from 295 to 330 K. We find the transition time from its high resistance phase to low resistance phase shows no clear dependence on both temperature and applied voltage pulse. However, there usually exists an incubation time before the MIT actually occurs when a large enough voltage is applied. This incubation time varies from less than 1 to more than 10 ns, and shows exponential dependence on both temperature and voltage.

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