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Title:Effects of porous nano-structure on the metal-insulator transition in VO<inf>2</inf> films
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Abstract:In this work, we confirmed experimentally that the porous nano-structure of vanadium dioxide (VO<inf>2</inf>) films had significant effects on the features of the metal-insulator transition. Porous VO<inf>2</inf> films had been synthesized on mica substrates via a simple solution process with inorganic precursor and cetyltrimethyl ammonium bromide (CTAB). SEM images showed a combination of homogenously distributed pores and VO<inf>2</inf> nanoparticles. Metal to insulator transition (MIT) characteristics measurements revealed that, the porous nano-structure VO<inf>2</inf> films had low transition temperature, wide hysteresis width and gentle slopes of hysteresis loop. Morphologies and MIT characteristics of the films could be controlled by simply varying CTAB concentration, which is of great importance in achieving practical applications. © 2012 Elsevier B.V.
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