272e Synthesis of Tantalum Pentoxide Films for High Temperature Applications

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Thick Tantalum Pentoxide (Ta2O5) films have been prepared on silicon <100> and quartz substrates from sol-gel synthesized precursors using spin coating. The effects of sol aging, spin rate and binder in promoting formation of stable Ta2O5 films are discussed. We report, for the first time, films of 1.6μm thickness that can withstand temperature of up to 900°C for over 9 hours and still observed to be stable, uniform and crack-free. Optical properties of the nanoporous films indicate that these are good candidates for high temperature microdevice application such as waveguides.