

Abstract Submitted
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Scavenging of oxygen from SrTiO₃ by metals and its implications for oxide thin film deposition AGHAM POSADAS, KRISTY KORMONDY, WEI GUO, PATRICK PONATH, JACQUELINE KREMER, TOBIAS HADAMEK, ALEXANDER DEMKOV, University of Texas at Austin — SrTiO₃ is a widely used substrate for the growth of other functional oxide thin films. However, SrTiO₃ loses oxygen very easily during oxide thin film deposition even under relatively high oxygen pressures. In some cases, there will be an interfacial layer of oxygen-deficient SrTiO₃ formed at the interface with the deposited oxide film, depending on the metals present in the film. By depositing a variety of metals layer by layer and measuring the evolution of the core level spectra of both the deposited metal and SrTiO₃ using x-ray photoelectron spectroscopy, we show that there are three distinct types of behavior that occur for thin metal films on SrTiO₃. We discuss the implications of these types of behavior for the growth of complex oxide thin films on SrTiO₃, and which oxide thin films are expected to produce an interfacial oxygen-deficient layer depending on their elemental constituents.

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