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14. ABSTRACT
During the final year of the grant, we have demonstrated reversible tunability of coupled phases transitions, including a perpendicular ferromagnetic transition, a metal insulator transition, an optical transition and a structural phase transition, by electrolytic gating of SrIrO3/(La,Sr)MnO3 superlattices. All of these effects are found to exist at room temperature. In addition, we have combined strongly spin-orbit coupled SrIrO3 with CoFeB to find that we can manipulate the magnetic moments in the ferromagnetic CoFeB layer via microwave charge current in the SrIrO3 layer. The versatility of the SrIrO3 layer for a wide range of functionalities make it a promising material for applications of interest to the Air Force.

15. SUBJECT TERMS
5d electrons, metal-to-insulator transition, oxide, heterostructure, switch, MBE

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