Abstract Submitted
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Transport and magnetization effects in strain coupled VO_2/FeRh heterostructures[1] STEVEN BENNETT, US Naval Research Laboratory, CHRISTIAN URBAN, JUAN TRASTOY, ILYA VALMIANSKI, IVAN SCHULLER, The University of California, San Diego — One of the great challenges of our time is to achieve maximum efficiency in the next generation of low power spintronics. To do so we can turn to inspiration from nature where the energy efficient control of hysteretic processes and exotic phase transitions in biological systems is commonplace. Specifically, the ability to change the magnetic state of a material with a low power electric field opens up a plethora of possible devices in spintronics and memory applications. Here we show the coupling effects between two materials with uniquely controllable phase transitions. VO_2 exhibits a metal insulator transition (MIT) as it's structure transitions between T-like monoclinic and rutile, and FeRh has a close to room temperature antiferromagnetic to ferromagnetic phase transition which has been shown to be highly sensitive to interfacial strain. Here we explore how these materials behave as a coupled heterostructure and consider the controllability of these characteristics using electronic stimulation of the MIT.

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