

UNL Department of Physics and Astronomy presents:

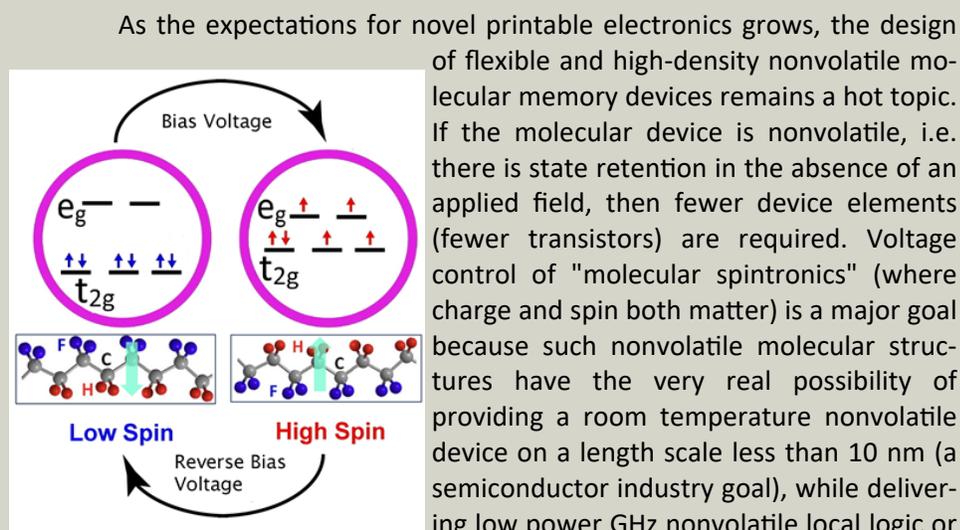
Can We Construct a Molecular Multiferroic Electronic Device?

PRESENTED BY
PETER DOWBEN,
University of
Nebraska-
Lincoln



THURSDAY
JANUARY 28
4:00 PM
VIA ZOOM

ABSTRACT



While much in its infancy, molecular spintronics has now been shown to be possible. The spin crossover (SCO) phenomenon, in 3d transition metal compounds, through the manipulation of interfacial chemistry, can be exploited to create voltage-controlled isothermal changes in the electronic structure. This has been shown for the Fe (II) spin crossover complexes interfaced with molecular ferroelectrics. This nonvolatile isothermal voltage controlled switching, at room temperature, is evident in both spectroscopy and transport studies of thin film bilayer devices [1,2]. This comes at a lower energy cost and must faster speeds and far less fabrication complexity than the currently commercially available nonvolatile memory (from Everspin, Toshiba and others) based on magnetic tunnel junctions. But there are challenges still to be addressed. The key take away point is that molecular nonvolatile room temperature "memory" devices have been realized and new developments in chemistry should lead to better molecular nonvolatile electronic devices.