

**HIGH FIELD ELECTRON INJECTION AND TRAPPING IN THICK OXIDE-NITRIDE-OXIDE FILM STACK.** *A. James, M. Potter\**, College of Engineering, [alj8314@rit.edu](mailto:alj8314@rit.edu), [mdpemc@rit.edu](mailto:mdpemc@rit.edu)

Trapped electronic charge within an insulator system (Embedded Charge) MEMS technology is being developed using composite oxide-nitride-oxide films. This technology has far reaching applications in sensing, power generation and wireless communications. Current literature for electron trapping is limited in scope to non-volatile memory applications, which do not have the same requirements as MEMS technology. Metal-oxide-nitride-oxide-silicon capacitors were fabricated and characterized. Charge was injected into the composite insulator using high field biasing; the resultant charge was analyzed using capacitance voltage techniques. A piecewise continuous mathematical model was developed, indicating the magnitude and spatial distribution of the resultant trapped charge. The developed model and experimental results correlate well, and will be discussed.