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Low Energy Electron Microscope Imaging of Doped Si Structures Buried under Thermal Oxides[1] GARY KELLOGG, MEREDITH ANDERSON, CRAIG NAKAKURA, Sandia National Laboratories — We present recent progress towards low energy electron microscope (LEEM) imaging of doped-silicon, diode test structures buried under thermally grown oxides. The question addressed here is whether the observed contrast at incident electron energies just above the vacuum cutoff is due to differences in doping type or oxide thicknesses. To circumvent complications arising from charging of the when exposed to the imaging electron beam, we developed a method to measure "pre-charging" current voltage (IV) curves and applied it to three test samples with oxide thicknesses varying from 2.8 to 50 nm. The vacuum cutoff energies obtained from the IV curves depend on both doping type *and* oxide thickness and are strongly influenced by external factors including surface contamination and UV exposure. The time dependence of the oxide charging increases significantly with oxide thickness providing further insights into the origins of LEEM contrast.

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