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### **Probing Ion Irradiation Effects with Buried Interface Devices**

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In this talk I will discuss our efforts to understand the energy loss of impacting multicharged ions in oxides. These ions possess uniquely high potential energies which have been shown to create surface features such as craters and hillocks. However, the full impact of their potential energy loss post-impact has not been fully explored. For example, below the surface the ions will lose energy continuously before coming to a rest. This energy loss per unit distance or stopping power of the ions within the solid matrix is predicted to depend on the charge state of the ions. In particular, the dynamical screening of the charge inside the solid is proposed to give rise to a pre-equilibrium stopping that will have a power law dependence on the charge state. We have explored this topic using metal-oxide-semiconductor (MOS) devices that contain oxides irradiated with multicharged Argon ions. As I will show, multiple aspects of the capacitance-voltage or C-V characteristics of these MOS devices scale with the ion charge state of the impacting Argon ions in a manner consistent with the expectations of pre-equilibrium stopping.