MAE Seminar SERIES

Glass surfaces and electrostatic charging

ABSTRACT

Corning glass is commonplace as a substrate in electronics and display technologies including flat panel display, IC packaging, and various other RF applications. Throughout electronic fabrication, glass surfaces are altered by various chemical, thermal, and mechanical processes. Such treatments may induce substantial changes to electrostatic attributes of the glass surface which can impact reliability phenomena such as electrostatic charging and discharging.

This presentation will give an overview of past and current work at Corning to understand the physics of 'contact electrification', a process by which electrostatic charge is transferred to or from a surface when contacted by another material. Electronic scale models will be presented to illustrate charge transfer under equilibrium conditions. We will also explore how parameters such as contact time, surface functionalization, and contacting material impact the amount of charge left on glass substrates. Lastly, atomistic models of realistic multicomponent glass surfaces in humid conditions will be presented to give the audience an idea of just how chemically complex these surfaces and interfaces can be.

Thursday, October 14

4:00 pm

Knox 04

Dr. Andrew Antony

Senior Process Modeling Engineer

Corning Incorporated

BIO SKETCH

Dr. Drew Antony graduated from Louisiana State University in 2013 with a B.S. in physics. He completed his Ph.D. degree in materials science and engineering from University of Florida in 2017 where he developed empirical force fields for simulating electrified water/metal interfaces. After a year of postdoctoral research at North Carolina State University's Nuclear Reactor Program, Drew joined Corning Incorporated in December of 2018. He is currently a senior process modeling engineer within the Manufacturing, Technology, and Engineering division at Corning.

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