SEMINAR
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Engineering Building 1 (EB1), Room 1010, 1 p.m.

Materials for Stretchable Electronics: From Hemispherical Digital Imagers to Devices for Cardiac Electrophysiology

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Engineering Building 1 (EB1), Room 1010, 1 p.m.

Electronic systems that involve transistors and other components on thin plastic or rubber substrates offer mechanical properties (e.g. bendability, stretchability) and other features (e.g. rugged, lightweight construction; curvilinear shapes) that cannot be achieved with conventional technologies. Examples of new device possibilities include electronic eyeball cameras and personal health monitors, where the electronics must conform to curved surfaces and flex/stretch during use. This talk describes the use of nanomaterials in integrated circuits that offer the electronic performance of state-of-the-art, wafer-based devices but with the mechanical properties of a rubber band. We explain the materials science and mechanics of these approaches, as well as aspects of their use in various electronic systems. Cardiac and brain monitoring devices provide examples of applications in biomedicine; hemispherical electronic eye imagers illustrate the capacity for bio-inspired device design.