



# Adaptronic Devices, Systems and Manufacturing

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Abstract: Adaptronic systems and devices relate to the design and manufacturing of systems that can adapt automatically by using material multifunctionalities, to variable operating environmental conditions through feedback control. For instance, a photochromic glass used in many sunglasses lets light pass and move in a regulated manner. This system contains a sensing component to detect the amount of light going through, an actuating part, and a control mechanism to regulate the passage of light and adapt to the surrounding environmental conditions. Dr. Garces has applied the fundamental principles of solid mechanics, polymer science, electronics, advanced manufacturing and design to produce and develop the stepping stones for these adaptronic systems. Adaptronic systems have applications in deployable actuators, robotic manipulators, soft-robotics, biomedical applications such as prosthetics and the aerospace and space-exploration industry. Adaptronic systems have the potential to be used in real low-cost engineering applications by constructing them using additive manufacturing. It is possible to embed sensors within multifunctional actuating materials to create adaptronic structures and assemblies. In this talk, we will explore the current state of the field of adaptronics, the exciting opportunities in this field, and the potential applications of this area in the industry.



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