Mechanical Engineering major Tyler Rhodes participated in the 2012 URCA Colloquium on May 17, presenting a poster describing his research on morphable mold systems. Tyler was awarded Third Prize from the UCSB Emeriti Association for his research.

Morphable Mold System
Tyler Rhodes
Faculty Mentor – P. Lubin

Abstract - It can cost hundreds of thousands of dollars to machine a high precision mold for a quadratic surface. For cases where multiple unique molds are required for production, the cost can quickly become enormous. Cost can be reduced significantly by replacing the expensive rigid molds with a single mold that could morph its surface into every required quadratic shape.

The morphable mold system (MMS) is designed to bend a thin, flat plate into a quadratic shape using linear actuators. The deformed plate can then be used as a mold surface for constructing carbon-fiber-reinforced polymer (CRFP) panels. Hundreds of uniquely shaped CRFP panels are required to build large telescope mirrors. Theoretically, a single MMS will be capable of molding every CRFP panel into its proper shape.