

Abstract Submitted  
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**Control of a Separation bubble at Low Reynolds Numbers Using Electro-Active Polymers** HALEY DELL'ORSO, LUCIA CHANG, SARAH ZAREMSKI, EDWARD DEMAURO, CHIA LEONG, MICHAEL AMITAY, Rensselaer Polytechnic Institute — An experimental investigation was performed to study the effects of electro-active polymers (EAPs) on a 3-dimensional separation bubble on a two-dimensional NACA0009 airfoil at a Reynolds number of 20,000 and an angle of attack 5 deg. A single row of EAPs was placed at 20% chord and activated at 1500V and 50Hz, corresponding to the Kelvin-Helmholtz frequency of the separated mixing layer. Stereoscopic Particle Image Velocimetry data were collected in the vicinity of the EAPs for three cases: baseline (no EAP present), EAP present but not actuated, and EAP present and actuated. Data demonstrated that the presence of the EAP slightly reduced the magnitude of the separation bubble. When the EAPs were actuated at the chosen frequency and voltage, the separation bubble was almost completely mitigated.

Michael Amitay  
Rensselaer Polytechnic Institute

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