

Abstract Submitted
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Measuring Pressure and Strain with Luminescent Coatings¹ KIMBERLY LOWNDES, Berry College, KYLE CHISM, AMRUTHKIRAN HEGDE, JAMES HUBNER, The University of Alabama — Often, researchers employ probes such as pressure taps and strain gauges to measure the pressure and strain on aerodynamic objects. However, these tools lack high-resolution and full-field capabilities that may be necessary for high-speed aerodynamic testing. A combination of photoelastic coatings (PEC) and pressure sensitive paint (PSP) has the potential to provide researchers with correlated, full-field surface measurements of maximum shear strain and pressure, respectively. Photoelastic coatings use circular polarized light along with birefringent material properties to provide information about the surface strain of objects, while pressure sensitive paint utilizes oxygen-quenched luminophores to measure pressure. Benchtop test results will be presented of a dual-layer PEC/PSP coating applied to cantilever specimens subjected to static and dynamic loading and imaged with a micro-polarizer digital camera.

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