

Abstract Submitted  
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**High Speed Pressure Sensitive Paint for Dynamic Testing**<sup>1</sup> CAROLINA PENA, Harvard University, KYLE CHISM, PAUL HUBNER, The University Of Alabama — Pressure sensitive paint (PSP) allows engineers to obtain accurate, high-spatial-resolution measurements of pressure fields over a structure. The pressure is directly related to the luminescence emitted by the paint due to oxygen quenching. Fast PSP has a higher surface area due to its porosity compared to conventional PSP, which enables faster diffusion and measurements to be acquired three orders of magnitude faster than with conventional PSP. A fast time response is needed when testing vibrating structures due to fluid-structure interaction. The goal of this summer project was to set-up, test and analyze the pressure field of an impinging air jet on a vibrating cantilever beam using Fast PSP. Software routines were developed for the processing of the emission images, videos of a static beam coated with Fast PSP were acquired with the air jet on and off, and the intensities of these two cases were ratioed and calibrated to pressure. Going forward, unsteady pressures on a vibrating beam will be measured and presented. Eventually, the long-term goal is to integrate luminescent pressure and strain measurement techniques, simultaneously using Fast PSP and a luminescent photoelastic coating on vibrating structures.

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