

Abstract Submitted  
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**Dye doped micro-droplets as a sensor for fluid dynamics applications**<sup>1</sup> TINDARO IOPPOLO, MAURIZIO MANZO, Southern Methodist University — We report that micro-droplets can be used as sensors for fluid dynamics applications. These microscale droplets in liquid or solid form are made of polymers that are doped with dyes. These tiny droplets behave as micro-scale optical cavities that support optical modes. The optical modes are excited remotely using a Nd:YAG laser with pulse repetition of 10Hz. Here we report the fabrication of the droplets and their feasibility as untethered wall pressure and temperature sensors. When the droplets are exposed to variations of temperature or pressure their morphology (size and index of refraction) change. This in turn leads to a shift of the optical modes. The optical modes and therefore their shifts are monitored using an optical spectrometer.

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