# Paper 38.1

# Emission Reabsorption Laser Induced Fluorescence (ERLIF) Measurement of Film Thickness

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**ABSTRACT**

This paper presents a novel technique for optical instantaneous whole field measurement of film thickness. Based on the reabsorption of one LIF emission frequency by another, the thickness of translucent liquid and solid films ranging from submicrons to centimeters can be accurately quantified independent of spatial and temporal variations in temperature, opacity, reflectivity, and excitation intensity. Presented is the fundamental principle and theory of Emission Reabsorption Laser Induced Fluorescence (ERLIF) and examples of the use of this technique in quantifying oil film thickness.