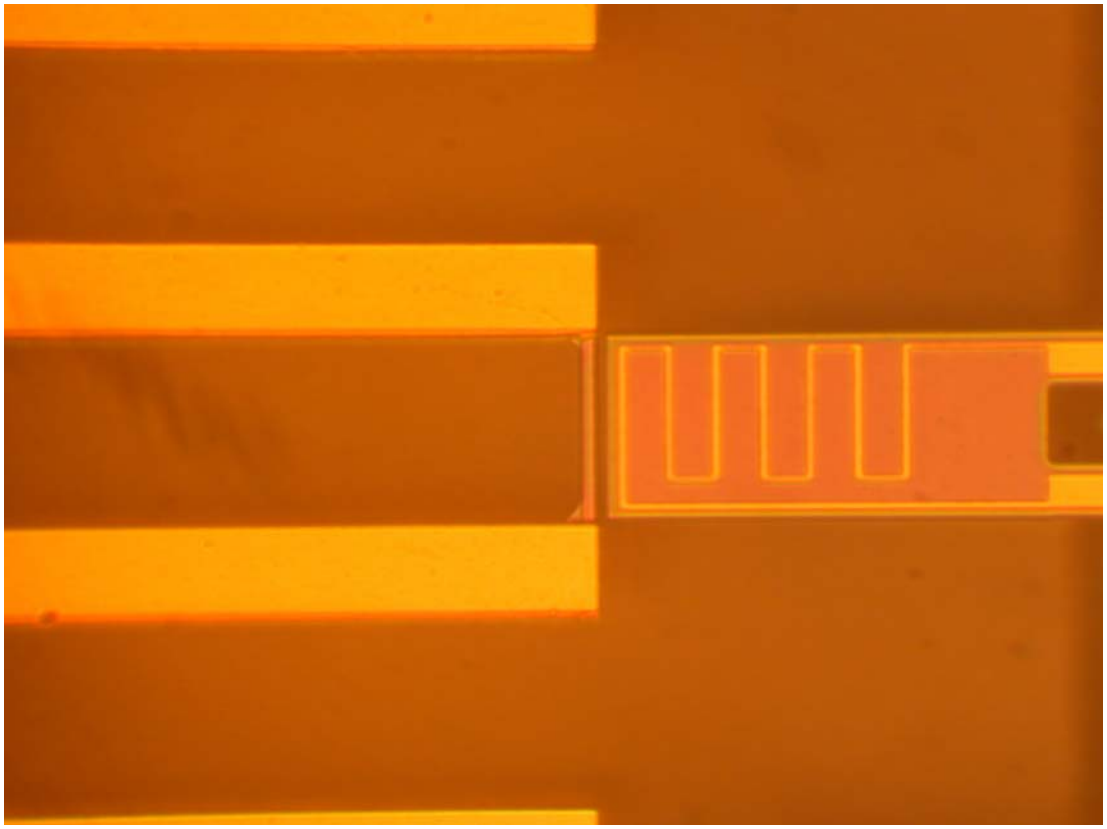
DEVELOPMENT OF PARYLENE END-POINT DETECTOR

W. Sutomo, X. Wang, D. Bullen, S. Baden, C. Liu, "Development of an End-Point Detector for Parylene Deposition Process," *J.MEMS*, **2003**, 12(1), 64-69.

Parylene is an important material used in microfluidics systems and Micro-Electro-Mechanical Systems (MEMS) in general. Parylene can be deposited under room temperature in a vacuum chamber. The deposition is highly conformal, making it one of the unique materials that complement the suite of MEMS fabrication methods. However, the deposition thickness of Parylene is difficult to control based on deposition time alone, and the performance of Parylene-based devices depends on the thickness of the film. The ability to monitor film thickness ensures uniformity of deposition thickness, which is highly important for future applications in MEMS and microfluidics systems.

This group has found that the deposition thickness is a function of the substrate temperature. This unique characteristic could potentially allow different Parylene thicknesses to be realized on different devices or different regions of a device in the same deposition chamber. The difference in deposition thickness at elevated temperature can be explained by enhanced desorption coefficient of Parylene.

This group has made the world's first Parylene thickness sensor based on thermal transfer principles. The sensor is capable of intrinsically monitoring the deposition thickness to an unprecedented accuracy.



World's First Parylene Thickness Sensor