

Abstract Submitted  
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**Interconnected Microcavity Plasma Arrays: New Opportunity For Microplasma Chemical Reactors** SUNG-JIN PARK, TYLER ANDERSON, JEFFREY MA, JIE ZHENG, CHERK LAM, J. GARY EDEN, University of Illinois at Urbana-Champaign — Various microchemical reactors consisting of parallel, linear arrays of interconnected cylindrical microcavity plasma devices have been fabricated by replica molding in ultraviolet-curable polymer. Tests of  $10 \times 10$  arrays of  $400 \mu\text{m}$  dia. devices with  $125 \mu\text{m}$  wide gas flow channels have been conducted in rare gas and Ar/CS<sub>2</sub> flows and excitation of the array with a sinusoidal voltage. Visible chemiluminescence ( $\lambda \sim 505 \text{ nm}$ ) resulting from the A  $\rightarrow$  X transition of CS<sub>2</sub><sup>+</sup> and the deposition of a (C – S)<sub>n</sub> microstructured polymer have been observed in the Ar/CS<sub>2</sub> flow experiments. Microplasma properties in a restricted gas flow and the potential of these arrays for microchemical applications will be discussed.

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