

Abstract Submitted  
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**Low threshold conjugated polymer lasers by intrinsically directed resonator design** ALEXANDER KUEHNE, DAVID WEITZ, Harvard University  
— Creation of laser cavities requires external imposition of an optical feedback system onto the gain medium. By contrast, we use functional conjugated polymers that can be chemically or physically patterned from within to form diffractive laser resonators. One realization is based on a chemically-modified polyfluorene, which can be patterned into distributed feedback (DFB) resonators of any desired grating period. A different route is by physically patterning conjugated polymers into sub-micrometer colloids via microfluidics. These systems can be tuned with respect to particle size and their arrangement in the resulting laser structure. We show random lasing for a photonic-glass, self-assembled from monodisperse conjugated polymer particles.

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