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Polymeric Micro/Nanostructures Fabricated through a Novel Method with Optical Microscopy CHAO-MIN CHENG, BIN LI, PHILIP LEDUC, Department of Mechanical Engineering, Carnegie Mellon University — We present a technique for building three-dimensional structures using optical methods with photocuring chemistry. This method merges an optics-based approach with chemical restructuring through the transition of materials from distinct phases. By activating a photocurable material in combination with controlling the intensity distributions that are inherent in optical patterns, in-situ fabrication of three-dimensional polymeric microstructures is demonstrated. Furthermore, polymeric nanostructures can be also obtained based on this method through combining this technique with Al2O3 nanopores. This experimentally simple approach combined with thermal control can create complex shapes including curved and asymmetric profiles. This method has potential applications in a variety of fields including optical technique, micro/nanoelectromechanical systems and microfluidics.

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