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**Co-extruded mechanically tunable multilayer elastomer laser** MICHAEL CRESCIMANNO, GUILIN MAO, Dept. of Physics, Youngstown State U., JAMES ANDREWS, Dept of Physics, Youngstown State U., KENNETH SINGER, Physics, Case Western Reserve U., ERIC BAER, ANNE HILTNER, Macromolecular, Case Western Reserve U., HYUNMIN SONG, BIJAYANDRA SHAKYA, Electrical Engineering, Youngs. State U. — We have fabricated and studied mechanically tunable elastomer dye lasers constructed in large area sheets by a single-step layer-multiplying co-extrusion process. The laser films consist of a central dye-doped (Rhodamine-6G) elastomer layer between two 128-layer distributed Bragg reflector (DBR) films comprised of alternating elastomer layers with different refractive indices. The central gain layer is formed by folding the coextruded DBR film to enclose a dye-doped skin layer. By mechanically stretching the elastomer laser film from 0% to 19%, a tunable miniature laser source was obtained with ~50 nm continuous tunability from red to green.

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