

Abstract Submitted
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Understanding temperature tuning of the all polymer co-extruded laser MICHAEL CRESCIMANNO, JIM ANDREWS, MICHAEL AVILES, NATHAN DAWSON, JOSHUA PETRUS, ANTHONY MAZZOCCO, Department of Physics and Astronomy, Youngstown State University, KEN SINGER, Department of Physics, Case Western Reserve University, ERIC BAER, Macromolecular Sciences, Case Western Reserve University, HYUNMIN SONG, unaffiliated — We investigate the effects of elevated temperatures on a few types of all-polymer multilayer films that were fabricated using a co-extrusion melt-process technique. We report on the anisotropic thermal expansion of the multilayer films, which affects the photonic crystal structure via constituent wise induced anisotropic strains and a change in the relative refractive indices. In addition to the characterization of these films in the temperature range of approximately 20-95 degrees C, we show the application to non-contact temperature sensing and wavelength tuning of all polymer Distributed FeedBack (DFB) lasers and Distributed Bragg Reflector (DBR) lasers.

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