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Optical Characterization of a Single Cavity in Random Laser Polymer Film Z.VALY VARDENY, ABDULLAH TULEK, University of Utah — Random lasing action with coherent feedback mechanism was previously attributed to inter-particle scattering of light forming close loops. A competing explanation is the formation of natural random cavities in the gain medium. We demonstrate the existence of such random cavities in thin polymer films by optically characterizing some of the lasing key properties such as size, threshold, and azimuthal emission intensity distribution. The optical properties of random cavities are compared with those of a fabricated microdisk having similar size, and the similarities and differences are emphasized.

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