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Random high-Q cavities in disordered photonic crystal waveguides FRANK VOLLMER, JURAJ TOPOLANCIK, Rowland Institute at Harvard — We demonstrate experimentally that structural perturbations imposed on highly dispersive photonic crystal-based waveguides give rise to spectral features that bear signatures of Anderson localization. Sharp resonances with effective Q's of over 30 000 are found in scattering spectra of disordered waveguides. The resonances are observed in a ∼20-nm bandwidth centered at the cutoff of slowly guided Bloch modes. The origin of the spectral features can be explained by the interference of coherently scattered electromagnetic waves which results in the formation of a narrow impurity (or localization) band populated with spectrally distinct quasistates. http://webmac.rowland.org/rjf/vollmer/index.php

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