



High-Q aluminum nitride photonic crystal nanobeam cavities

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We demonstrate high optical quality factors in aluminum nitride (AlN) photonic crystal nanobeam cavities. Suspended AlN photonic crystal nanobeams are fabricated in sputter-deposited AlN-on-insulator substrates using a self-protecting release process. Employing one-dimensional photonic crystal cavities coupled to integrated optical circuits we measure quality factors up to 146,000. By varying the waveguide-cavity coupling gap, extinction ratios in excess of 15 dB are obtained. Our results open the door for integrated photonic bandgap structures made from a low loss, wide-transparency, nonlinear optical material system.

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