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GaP Photonic Crystal Microcavities for Coupling to Nitrogen-Vacancy Centers in Diamond[1] JENNA HAGEMEIER, SUSANNA THON, HYOCHUL KIM, University of California, Santa Barbara, California, USA, DIRK BOUWMEESTER, University of California, Santa Barbara, California, USA and Leiden University, The Netherlands, RONALD HANSON, TOENO VAN DER SAR, WOLFGANG PFAFF, Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands, TJERK OOSTERKAMP, Leiden Institute of Physics, Leiden University, The Netherlands — Nitrogen-Vacancy (NV) centers in diamond have been studied as single quantum emitters for applications in quantum optics and quantum information. We discuss the possibility of coupling single NV centers in diamond nanocrystals to GaP photonic crystal (PC) microcavities. Fabrication of PC microcavities in GaP, with quality factors of up to 5000, will be presented, as well as methods for characterizing bare cavities using optical fiber tapers. Positioning of diamond nanocrystals containing single NV centers for coupling to the optical mode of a PC device will also be discussed.

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