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**The Interplay of Electronic Properties and Magnetic Anisotropy in Quantum Dots** IGOR ZUTIC, JEONGSU LEE, SUNY at Buffalo, KAREL VYBORNY, SUNY at Buffalo / Institute of Physics, ASCR, JONG HAN, SUNY at Buffalo, ANDRE PETUKHOV, South Dakota School of Mines & Technology — Tunability of magnetic anisotropy (MA) in nanostructures is a fascinating topic, for both fundamental understanding of nanomagnetism and possible spintronic applications. While there have been preceding efforts to systematically study the MA in bulk [1], we still lack a fundamental understanding of that in magnetic quantum dots (QDs). We first explore electronic properties of nonmagnetic QDs that can be significantly altered from the bulk-state depending upon the material and geometry. Focusing on II-VI materials forming both cubic and non-cubic QDs, we confirm qualitatively different energy spectra between different materials [2]. These findings can guide the control of MA in magnetic QDs. Supported by DOE-BES, NSF-DMR, AFOSR-DCT, U.S. ONR, and NSF-ECCS.

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[2] K. Výborný, J.E. Han, R. Oszwadowski, I. Žutić, and A. G. Petukhov, preprint (2011).

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