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Magnetism and Carrier Spin Polarization in Mn-doped CdSe Quantum Dots[1] SAVAS DELIKANLI, ANDREAS RUSS, LARS SCHWEIDENBACK, ATHOS PETROU, HAO ZENG — We report the magnetic and magneto-optical properties of Mn2+ doped CdSe nanoparticles synthesized by hot colloidal solution method. Magnetic hysteresis measurements on a particle ensemble show that they are paramagnetic at room temperature, and become ferromagnetic below about 50 K. The coercivity reaches to about 0.4 Tesla at 6K. The carrier spin polarization has been investigated by circularly polarized photoluminescence. Positive circular polarization of the PL of 30% at 7K has been observed. This is due to the excitonic Zeeman splitting resulting from the strong sp-d exchange interactions between the carriers and Mn dopants. The circular polarization has been investigated as a function of applied magnetic field in the 7-100 K temperature range.

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