

## Dangling bond spins controlling recombination dynamics of excitons in colloidal nanocrystals and nanoplatelets

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We show theoretically that spins of dangling bonds (DBS) at surface of colloidal nanostructures can be responsible for the dark exciton radiative recombination governing low temperature photoluminescence. The DBS-assisted dark exciton recombination is efficient when all spins are randomly oriented. The DBS polarization caused by external magnetic field or by the formation of the dangling bond magnetic polaron (DBMP) at low temperatures suppresses the DBS-assisted recombination. The temperature or magnetic field control on the DBS-polarization allows to detect experimentally the presence of DBS and DBS-assisted recombination in CdSe nanocrystals and 2D nanoplatelets.

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