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Charge trapping and de-trapping in isolated CdSe/ZnS nanocrystals under an external electric field: indirect evidence of a permanent dipole moment HUIDONG ZANG, MINGZHAO LIU, FERNANDO CAMINO, MIRCEA COTLET, Brookhaven National Laboratory, CENTER FOR FUNCTIONAL NANOMATERIALS TEAM — The charge trapping and de-trapping processes in single CdSe/ZnS nanocrystals under external electric field were systematically studied. The results clearly demonstrated that the external electric field can reversibly modulate the exciton dynamics and photoluminescence blinking, which provide further evidence for the existence of a permanent ground state dipole moment in isolated nanocrystals. A model which assumes energetically deep charge traps is proposed to explain on/off blinking in isolated CdSe/ZnS nanocrystals with the presence of a permanent dipole moment.

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