**Fabrication and characterization of high-performance photodetectors based on Au/CdS/Au and Au/Ni:CdS/Au junctions**

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**Fig.S1.** (a)Absorption index *k* and refractive index *n* (b) Dielectric constant and Dielectric loss of nanostructure thin films with different Ni doping concentrations.



**Fig. S2.** (a) Linear optical susceptibility *(χ1)* (b) Nonlinear optical susceptibility *(χ3)* and (c) Nonlinear refractive index *(n(2))* of pure and Ni doped nanostructured thin films.