The supporting materials for

Surface doping of La ions into ZnO nanocrystals to lower the optimal working temperature for HCHO sensing properties

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As is well known, EPR measurement is a very good method to characterize the surface defect. Thus, our samples were subjected to this characterization and the EPR results are shown in Figure S1. The only one single EPR signal at g ~ 1.9590 can be observed and is probably attributed to singly ionized oxygen vacancies ($V_O^{\bullet}$) produced from $V_O^{\times}$ by light excitation.[1,2] It can be seen that La0.05-ZnO exhibits a much lower EPR signal intensity than pure ZnO, indicating that La0.05-ZnO has more oxygen vacancies than pure ZnO. In this sense, La doping can reduce the amount of oxygen vacancies, which is in accord with the above PL results.

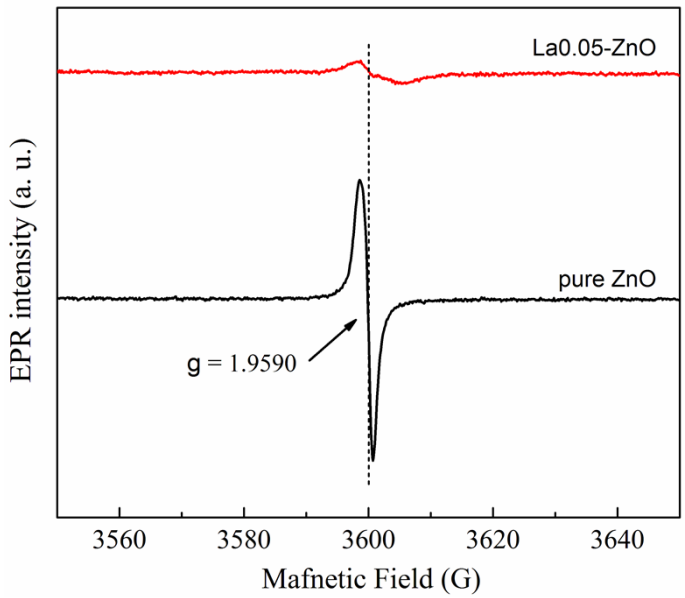

Figure S1 EPR spectra measured at room temperature from pure ZnO and La0.05-ZnO.

Reference:

(1) Kaftelen, H.; Ocakoglu, K.; Thomann, R.; Tu, S.; Weber, S.; Erdem, E. EPR and Photoluminescence Spectroscopy Studies on The Defect Structure of ZnO Nanocrystals. *Phys. Rev. B* **2012**, *86*, 014113.

(2) Janotti, A.; Van de Walle, C.G. Native Point Defects in ZnO. *Phys. Rev. B* **2007**, *76*, 165202.