

FLUORESCENCE GAS SENSOR BASED ON CdTe QUANTUM DOTS FOR DETECTION OF VOLATILE ORGANIC COMPOUNDS GAS

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ABSTRACT

The CdTe quantum dots (QDs) synthesized using a wet chemical process was utilized an attempt to develop thin film sensor for detection of organic vapors. A sensor system was setup, comprises an excitation light source made of laser diode, a dual arm fiber optic probe, a spectrometer, a sensor chamber and a nitrogen gas for driving the vapor sample from the vapor compartment. The QDs thin film was deposited by dropping QDs solution onto the probe surface and let them dried in the ambient temperature. The detection of organic vapors was done by comparing the photoluminescence (PL) spectra the thin film exposed in the nitrogen gas and in organic vapors. The PL intensity of the CdTe thin film was quenched by the presence organic vapors with the increasing of a reaction of time until reached the saturation.

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REFERENCES

- [1] E. Vance, Nature News. 459 (2009) 498-499
- [2] S. Liu, L. Yuan, X. Yue, Z. Zheng and Z. Tang, Adv. Powder Tech. 19 (2008) 419-441
- [3] J.M. Klostranec, and W.C.W. Chan, Adv. Mater. 18 (2006) 1953
- [4] I. L. Medintz, A. R. Clapp, H. Mattoussi, E. R. Goldman, B. Fisher and J. M. Mauro, Nature Materials, 2 (2003) 630-638
- [5] M. Qiang, C. Honglei, and S. Xingguang, Biosensor and Bioelectronics. 25 (2009) 839-844
- [6] D. V. Talapin, A. L. Rogach, A. Kornowski, M. Haase and H. Weller. Nano Lett. 1, (2001) 207-211
- [7] Z. Zhao, M. Arrandale, O. V. Vassiltsova, M. A. Petrukhina and M. A. Carpenter, Sensors and Actuators B. 141 (2009) 26-33