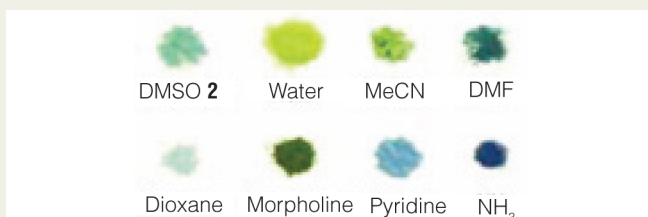


## High-sensitivity Vapochromic Gas Sensor

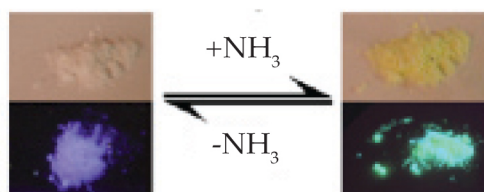
This invention relates to a novel vapochromic gas sensor with high sensitivity and strong visible (UV-Vis and fluorescence) and infrared (IR) detection channels. The sensor can function as either a high-end fixed IR gas detector, or a low-cost dosimeter safety badge or tube. The production of the sensing medium is readily achieved using commercially available starting materials.

### Applications

Detectable materials include ammonia and amines at parts per billion (ppb) detection limits using fluorescence or IR, and other VOCs at parts per million (ppm) IR and visible colour change detection limits.



**Figure 1.** Visible colour changes from exposure of  $\text{Cu}[\text{Au}(\text{CN})_2]_2$ -based material to a given VOC(gas).



**Figure 2.** Visible and fluorescence emission colour changes from exposure of  $\text{Zn}[\text{Au}(\text{CN})_2]_2$  to gaseous  $\text{NH}_3$ .

### Advantages

- Low cost;
- High sensitivity, particularly for ammonia and amines;
- Three possible detection channels (Visible colour, visible emission, and IR).

### Stage of Development

Working prototype.

### Inventors

Daniel Leznoff et al., Simon Fraser University.

### Intellectual Property Status

PCT national phase in Canada, United States and Europe filed April 15, 2007.

CA 2584190, US 11/577299 and EU 05797022

A CIP was submitted and filed on July 8, 2008.

### Partnering Opportunity

Available for licensing (exclusive or non-exclusive) by jurisdiction and/or field of use.

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### Related Research Publications

Lefebvre, J.; Batchelor, R.J.; Leznoff, D.B. "Cu[Au(CN)<sub>2</sub>]<sub>2</sub>(DMSO)<sub>2</sub>: Golden Polymorphs that Exhibit Vapochromic Behaviour" *J. Am. Chem. Soc.*, **2004**, 126, 16117-16125.

Katz, M.J.; Ramnial, T.; Yu, H.Z.; Leznoff, D.B. "Polymorphism of Zn[Au(CN)<sub>2</sub>]<sub>2</sub> and its luminescent sensory response to NH<sub>3</sub> vapour." *J. Am. Chem. Soc.*, **2008**, 130, 10662-10673.