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Hybrid perovskite halide for detection of environmental pollutant in atmosphere

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In recent years, the organic/inorganic halide perovskites are emerging material and have attracted significant attention because of its various important application potentials like solar cells and other optoelectronic applications. Sensors based on thin films of different materials are widely used for various hazardous gas detection. These sensors with proper electrical readout, if made sensitive enough can even be used for non-invasive diagnosis of disease using the technique of breath analysis. While there are many electrical readout sensors that can detect hazardous gas typically with concentration ≥10 ppm, there are not too many visual (color change type) sensors that can easily detect hazardous gas with comparable sensitivity. Very recent developments of a visual color change-based sensor made using hybrid perovskite halide as working material led to detection of hazardous gas like ammonia with concentration <5 ppm with very high selectivity in room temperature. The low cost of the synthesis and the fact that it is made on a paper makes the sensor disposable. It is a low cost portable sensor for rapid, easy and selective detection of the atmospheric ammonia in open or closed environment by a simple color change effect, without the need for any other instruments. This visual sensor will be useful in places that can produce and emit ammonia gas in the environment such as food grain storage facilities, waste disposal sites and perishable materials storage facilities.

Biography

Dr. Barnali Ghosh Saha), is now a Scientist-E, (Associate Professor) in the Department fo Condensed Matter Physics and Material Sciences and Head of the department of Technical Research facility programme. She is a member of Indian Physics Association. She got Ph.D degree in Physic award in 1998. She got a research Award in Woman Scientist programme in 2003 and 2008 from "Department of Science and Technology, Government of India". Currently Dr. Barnali Ghosh (Saha)'s researches focus on experimental condensed matter Physics and Nano Science and nanotechnology, Physics of transition metal oxides mainly perovskite oxides. She is also working on fabrication of single nanowire based devices using different lithographic techniques like, e-beam and focused ion beam techniques and transport measurement on single nanowire. She also does cross sectional transmission electron microscopy related work using focused ion beam based techniques.

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