

List of Publications

Patent

1. A portable capacitive sensor system using TiO₂ nanotubes for detecting methanol contamination in alcoholic beverages (Indian patent, to be filed).

Journal Publications

1. P. Bindra, A. Hazra, Dielectric sensor system using TiO₂ nanotubes for real time detection of methanol contamination in alcoholic beverages. *IEEE Transactions on Instrumentation and Measurement* (Accepted). DOI: 10.1109/TIM.2020.2971328
2. P. Bindra, S. Gangopadhyay, A. Hazra, 1-D TiO₂ nanorods array based parallel electrode sensor for selective and stable detection of organic vapors. *IEEE Sensors Journal*, vol. 20, no. 2, pp.664-671, 2020.
3. P. Bindra, A. Hazra, Selective detection of organic vapors using TiO₂ nanotubes based single sensor at room temperature. *Sensors and Actuators B: Chemical*, Elsevier, vol. 290, pp. 684-690, 2019.
4. P. Bindra, A. Hazra, Multi-layered TiO₂ nanotubes array based highly sensitive room temperature vapor sensors. *IEEE Transactions on Nanotechnology*, vol. 18, pp. 13-20, 2019.
5. P. Bindra, S. Gangopadhyay, A. Hazra, Au/TiO₂ nanotubes/Ti based solid state vapor sensor: Efficient sensing in resistive and capacitive modes. *IEEE Transactions on Electron Devices*, vol. 65, no. 5, pp. 1918-1924, 2018.
6. P. Bindra, A. Hazra, Impedance behavior of n-type TiO₂ nanotube porous layer in reducing vapor ambient. *Vacuum*, Elsevier, vol. 152, pp. 78-83, 2018.
7. P. Bindra, A. Hazra, Capacitive gas and vapor sensors using nanomaterials. *J Mater Sci: Mater Electron*, Springer, vol. 29, no. 8, 6129-6148, 2018.

Conference Proceedings

1. P. Bindra, A. Hazra, "Impedance behavior of TiO₂ nanotube porous layer in reducing vapor ambient", 17th International Conference on Thin Films, CSIR-National Physical Laboratory, New Delhi, 2017.
2. P. Bindra, A. Hazra, "Controlled variation of structural parameters of electrochemically grown TiO₂ nanotube array", International Conference on Nano and Functional Materials, BITS Pilani, 2017.
3. A. Hazra, P. Bindra, "Resistive and Capacitive Sensing Performance of TiO₂ Nanotube based Vapor Sensor", 5th International Conference on Advanced Nanomaterial and Nanotechnology, IIT Guwahati, 2017.
4. P. Bindra, A. Hazra, "Double layer TiO₂ nanotubes-based sensor for methanol detection at room temperature", International Functional Nanomaterials and Nanodevice Conference, Renaissance Wien Hotel, Vienna, 2018.
5. P. Bindra, A. Hazra, "Highly sensitive capacitive type ethanol sensors based on double layer TiO₂ nanotubes array", International Workshop on Nano-Micro 2D-3D Fabrication, Manufacturing of Electronic-Biomedical Devices and Applications, IIT Mandi, 2018.
6. P. Bindra, A. Hazra, "Hydrothermal synthesis of 1-D TiO₂ nanorods on Ti substrate for efficient vapor sensing", International Conference on Nano-Structured Materials & Devices, University of Delhi, 2018.
7. P. Bindra, A. Hazra, "An insight into one dimensional nanostructures for capacitive gas sensing", Symposium on Carbon Nanomaterial Electronics, BITS Pilani, 2019.

Brief Biography of the Candidate

Mr. Prateek Bindra received B. Tech. (Bachelor of Technology) degree in Electronics and Communication from Technological Institute of Textile and Sciences, Bhiwani, India in 2009. He received M. E. (Masters in Engineering) degree in Microelectronics from Birla Institute of Technology and Science Pilani, Goa Campus, India in 2013. He joined the Ph.D. program in Electrical and Electronics department of Birla Institute of Technology and Science Pilani, Pilani Campus, India in 2016 where he enjoyed fabricating TiO_2 nanostructures based solid-state sensors. His Ph.D. work majorly consists of the following areas: synthesis of 1-D TiO_2 nanostructures, nanomaterial characterization, device modeling, fabrication of volatile organic compounds (VOCs) sensors, and sensors study.

Brief Biography of the Supervisor

Dr. Arnab Hazra received his B. Tech degree in Electronics and Communication Engineering from West Bengal University of Technology, Kolkata, India in 2009. He received his M. Tech degree in VLSI design and Ph.D. degree on 'Nanomaterial based chemical sensor devices' from Indian Institute of Engineering Science and Technology (IEST), Shibpur, India in 2011 and 2015, respectively. Presently, he is an assistant professor in the Department of Electrical and Electronics Engineering, Birla Institute of Technology and Science (BITS)-Pilani, Rajasthan, India. He visited Tel Aviv University, Israel in December, 2018 and Sensor Laboratory, University of Brescia, Italy in May to June, 2018 as a visiting scientist. He also worked as a visiting faculty at IC Design and Fabrication center, Dept. of Electronics and Telecommunication Engineering, Jadavpur University August, 2014 to January, 2015 and Budge Budge Institute of Technology, Kolkata on and from August, 2011 to January, 2012. He has published about sixty research articles in the journals and conferences of international repute. His present research interest includes metal oxide gas and vapor sensors and other semiconductor devices like resistive random access memory (RRAM). He received best Ph.D. thesis award by Indian National Academy of Engineering (INAE) and ISSS, India by in 2015 and 2016, respectively. He also received IETI young engineer award by Institute of Engineers, India in 2016.



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