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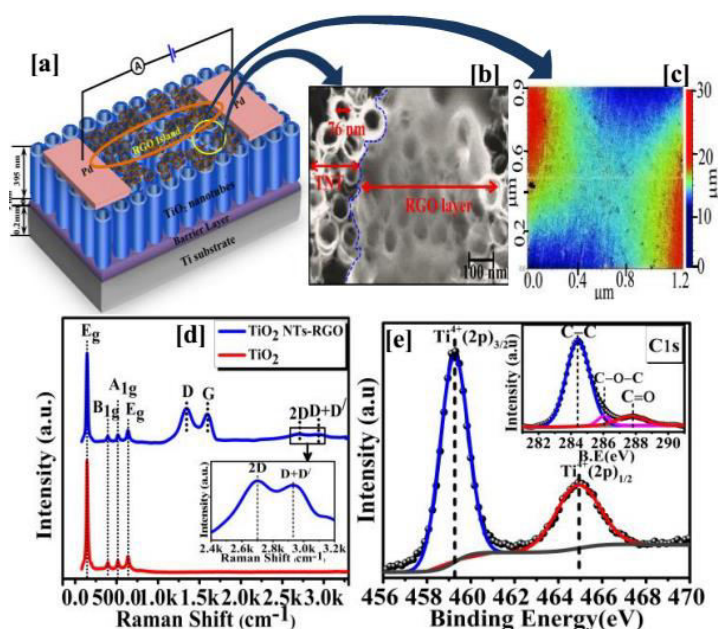


**Highlights of his / her research ( not more than 100 words)**

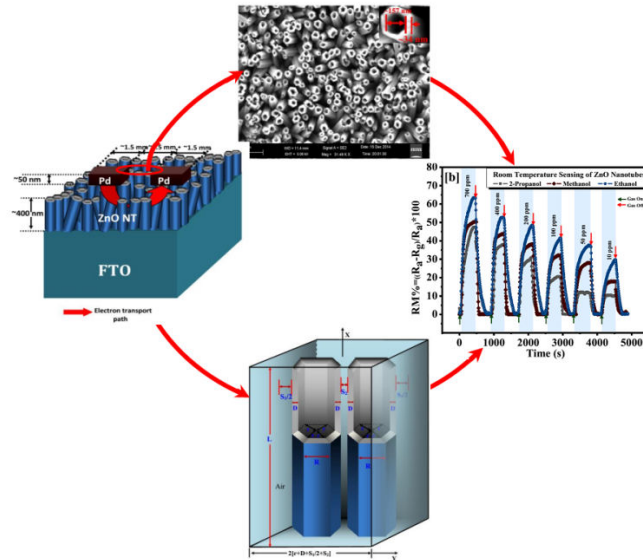
Semiconducting oxide nanoforms, graphene and graphene derivatives based hybrid sensor device development towards performance improvement of chemical sensor Development of solid state sensor devices for early detection of Prostate and Lung cancer.

Development of sensors for monitoring the quality of fruits and vegetables.. Different semiconducting oxide nanoforms like nanorods, nanotubes and nanoflowers were developed and hybridized with graphene consequently their response towards these target species were investigated employing various device structures, with in-built microheater and necessary signal conditioning unit were developed for efficient monitoring of volatile organic compound vapours.

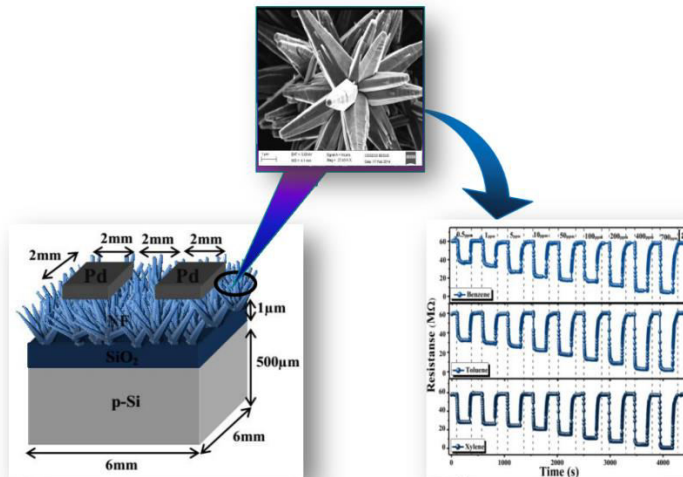
Representative best pictures/ plot/graph with proper heading: 2 - 4 nos.



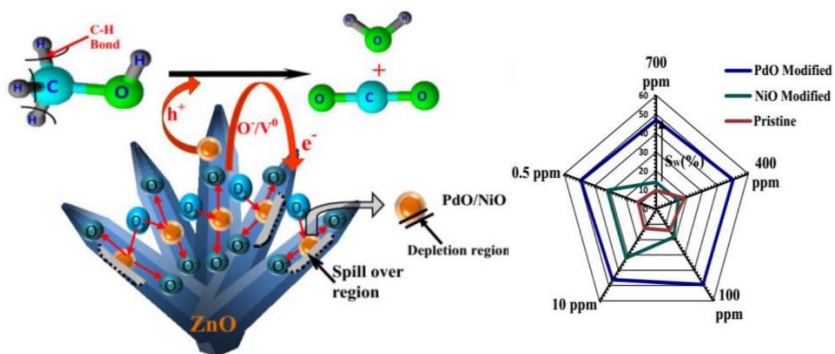
**Highly Efficient Room Temperature**  
**Gas Sensor based on TiO<sub>2</sub> Nanotubes-Reduced Graphene Oxide Hybrid Device**



**Alcohol sensing performance of ZnO hexagonal nanotubes at room Temperature: A qualitative understanding**



**An efficient BTX sensor based on ZnO nanoflowers grown by CBD method**



**Hybrid 3D structures of ZnO nanoflowers and PdO nanoparticles as a highly selective methanol sensor**

**Publications:****Patent:**

[1] Partha Bhattacharyya, Debanjan Acharyya, A process for fabrication of hybrid junction of reduced graphene oxide nanoribbon and TiO<sub>2</sub> nanotube array (TNTA) based gas sensor system, Indian Patent application no. 201631015735 (Filed on 05.05.2016).

**Peer Reviewed Archival Journal:**

[1] Debanjan Acharyya, Partha Bhattacharyya, "Highly Efficient Room Temperature Gas Sensor based on TiO<sub>2</sub> Nanotubes-Reduced Graphene Oxide Hybrid Device", IEEE Electron Device Letters, vol. 37, No. 5, pp. 656-6593, 2016 [Impact Factor: 2.52].

[2] D. Acharyya, P. Bhattacharyya, "Alcohol Sensing Performance of ZnO Hexagonal Nanotubes at Low Temperatures: A Qualitative Understanding", Sensors and Actuators B: Chemical (Elsevier), Vol. 228, pp. 373–386, 2016. [Impact Factor: 4.75].

[3] D. Acharyya, K.Y. Huang, P.P. Chattopadhyay, M. S. Ho, H- J. Fecht, P. Bhattacharyya, Hybrid 3D Structures of ZnO Nanoflowers and PdO Nanoparticles as a Highly Selective Methanol Sensor, Analyst (RSC), vol. 141, No. 10, pp.2977-2989 (2016) [Impact Factor: 4.107].

[4] D. Acharyya, P. Bhattacharyya, "An efficient BTX sensor based on ZnO nanoflowers grown by CBD method ", Solid State Electronics (Elsevier), Vol. 106, pp. 18–26, 2015 [Impact Factor: 1.504].

[5] D. Acharyya, A. Hazra, P. Bhattacharyya, "A Journey Towards Reliability Improvement of TiO<sub>2</sub> based Resistive Random Access Memory: A Review", Microelectronics Reliability (Elsevier), Vol.54, pp.541-560, 2014 [Impact Factor 1.433].

[6] D. Acharyya, A. Hazra, K. Dutta, R. K. Gupta, P. Bhattacharyya, "Highly Repeatable Multi Level Resistive Switching Characteristics of Au/TiO<sub>2</sub>/Ti Memory Devices", Semiconductor Science and Technology (IOP) Vol.28, pp.125001-7, 2013. [Impact Factor: 2.19].

[7] D. Acharyya, S. Acharyya, K.Y. Huang, P. F. Chung, M. S. Ho, P. Bhattacharyya, "Tunable C:O ratio of rGO-TiO<sub>2</sub> nanotube hybrid gas sensor devices: An efficient route to improve sensitivity and dynamic range", IEEE Sensors (Under Review).

**Conference Paper:**

[1] Debanjan Acharyya, Partha Bhattacharyya, "RGO and TiO<sub>2</sub> Nanotube Matrix based Binary Hybrid Device for Reliable Detection of Methyl Acetate Vapor", Applied Nanotechnology and Nano science International Conference (ANNIC- 2016), November 9-11th, 2016, Barcelona, Spain.

- [2] Debanjan Acharyya, Nabaneeta Banerjee, Partha Bhattacharyya, A comparative study on methanol sensing performance of ZnO nanoflower and nanorod based resistive devices, IEEE SENSORS 2014, Valencia, Spain, November 2nd -5th, 2014.
- [3] A. Hazra, D. Acharyya, P. Bhattacharyya, "Electrochemically Grown Nano-Structured TiO<sub>2</sub> Based Low Power Resistive Random Access Memory", International Conference on Emerging Trends in Computing, Communication and Nanotechnology (IEEE-ICE-CCN 2013) held at Infant Jesus College of engineering and Technology, Tutikorin, Tamilnadu, India during March 25-26, 2013.
- [4] K. Dutta, S. Das, N. Banerjee, D. Acharyya, P.P. Chattopadhyay, P. Bhattacharyya, Methanol Sensing Performance of Two Different ZnO Nanoflowers Grown by CBD Method: A Comparative Study, European Conference on Surface Science (ECOSS 30), 2014, organized by Dept. of Chemistry, Bilkent University, Ankara, Turkey, 31 August -5 September, 2014.
- [5] Nabaneeta Banerjee, Debanjan Acharyya, Partha Bhattacharyya "Growth, Characterizations and Methanol Sensing Performance of ZnO Nanoflowers Grown By CBD Method", held in International Conference on Advanced Materials and Energy Technology (ICAMET), IEST, India during 17-19th December, 2014.