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7.	<p>Brief account of your research interests with special focus on Nano Science and Technology (strictly within 300 words):</p> <p>This research group headed by Professor Mahendra D. Shirsat is working in the field of chemical sensors since 2010. Initially, the research interest for this team was to synthesize two dimensional structures from conducting polymers for biosensor as well as toxic vapour sensor applications. They had carried out extensive research in the field and successfully fabricated glucose, urea and ammonia sensors at that early phase.</p> <p>The transition of impetus from macro-materials to nanostructures, for this team, didn't take place merely out of research interest rather due to severe constraints faced with conventional modalities. In order to achieve, especially, miniaturized sensor footprint, lesser energy consumption and improved reproducibility, the aid of nanotechnology proved to be highly fruitful. From then onwards, the group is actively engaged in synthesis and modification of nano-structured materials for target oriented outputs.</p> <p>In a span last couple of years, the group has-</p> <ul style="list-style-type: none"> ▪ Developed Glucose Biosensors by using multilayer structure of conducting polymer and Carbon Nanotubes. These sensors got excellent linearity from 1 mM to 50 mM of glucose concentration. ▪ Fabricated H₂S sensors with metal decorated Polyaniline nanowires electrode junctions with excellent sensitivity down to 1ppb. ▪ Designed and fabricated Vapour phase Chemical Vapour Deposition machine for

	<p>synthesis of Multi Wall carbon nanotubes under a CSIR project. It is worth mentioning here that the type of machine this group has fabricated costs around Rs. 17 to 21 lakhs from any standard make. However, this group has spent only Rs. 8.10 lakhs for the same. Thus, straight away an amount of Rs. 10 to 12 lakhs has been saved from our national resources. Presently Multi wall Carbon nanotubes have been synthesized with the machine and modifications are under process to synthesized SWNTs</p> <p>Presently this group is focusing on development of nanosensor array based on Single Walled Carbon Nanotubes (SWNTs). They are modifying SWNT surface by conducting polymers, metalloporphyrins and metal nanoparticles to improve selectivity, sensitivity and retentivity of an individual sensor element. In fact their ultimate aim is to develop hand held sensing gadget for real time monitoring of VOCs and hazardous gases. The nanosensor array is being tested both by chemiresistive as well as CHEMFET configurations. Professor Shirsat is a recipient of BOYSCAST fellowship of DST, New Delhi. He is also recipient of Visiting Fellowship from University of Wollongong, Australia in 2006 and from University of California, Riverside, USA in 2008-2009. This group has collaboration with University of Wollongong, Australia and University of California, Riverside, USA.</p>
8.	<p>Keywords related to your research interests (maximum 10, different lines separated by commas)</p> <p>Single Walled Carbon nanotubes, Conducting polymers, Gas Sensor, VOC Sensor, Porphyrins, Chemiresistive, CHEMFET, Nanowires, nanoparticles, Irradiation</p>