Wireless Networked Sensors in Water for Heavy Metal Detection

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Impact:
RCRA 8 heavy metals - arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver - have attracted a great deal of attention for their impact on environmental pollution and human health.

NanoSonic’s practical and reliable wireless networked chemical sensors offer high selectivity and high sensitivity as low as 0.01 ppm, for the detection and mapping of RCRA 8 heavy metal contaminants in water, for use within power generation facilities.

Broad Range Applications:
- Water quality monitoring
- Industrial
- Environmental
- Waste site chemical monitoring
- Biochemical sensors

Technology and Product:
- An array of ChemFET sensor devices combined with NanoSonic’s patented molecular-level self-assembly technique yields individual sensors that are both sensitive and selective to specific heavy metal target molecules
- Wireless interconnection will allow data from a ChemFET array probe to be transmitted to a cell phone or tablet, or data from multiple probes to a fixed central electronics unit that can communicate data to customers via the web
- Nanosonic’s chemical sensors can be portable, flowable, or attachable to achieve real-time onsite chemical monitoring
- Thin sensing film deposition at room temperature and pressure allows low-cost manufacturing of thin films on flexible and rigid substrates
- The layer-by-layer self assembly materials are inkjet printable enabling effective sensing array element fabrication

IP and Awards:
- NanoSonic has exclusively licensed nine patents covering electrostatic self-assembly (ESA) processing and use from Virginia Tech and is establishing its own intellectual property portfolio to enable process, material, and device commercialization
- R&D 100 Award for Metal Rubber™
- R&D 100 Award for HybridSil® Fire Blast
- Metal Rubber was recognized as one of NASA’s top 13 nanotechnology products
- Micro Nano 25 Award for flexible electronics

Company and Team:
NanoSonic has a portfolio of patents to support the transition of nanostructured materials into advanced macroscale products.

NanoSonic has three major technical divisions – Polymer Chemistry, Nanocomposites, and Sensors and Systems – and marketing and business development divisions.

DOE SBIR Team:
Dr. Hang Ruan, Principal Investigator
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