Washington University in St. Louis
Office of Technology Management

INSECT-INSPIRED ELECTRONIC-NOSE TECHNOLOGY FOR RELIABLE, ROBUST AND REAL-WORLD CHEMICAL SENSING

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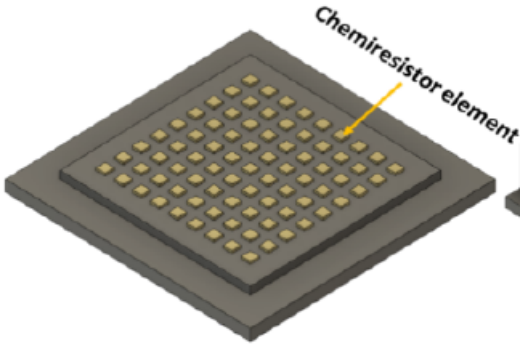
Value Proposition: *Portable and deployable platform that uses an AI-enabled, nanoparticle-based e-nose to sense explosive volatile organic compounds.*

Technology Description

Researchers at Washington University in St. Louis have developed a low-power electronic nose that uses an array of chemiresistors to detect signature patterns for multiple target species. Current chemical sensing technologies use amplifiers to amplify the signal, which requires a lot of power. This technology uses a scalable approach for generating a large chemical sensor array with functionally diverse nanostructured sensing elements that are robust, highly durable, & reproducible, and unlike other systems, can test for multiple chemicals.



Above figure: Schematic illustration of the chemiresistor functionalization chamber enabling the controlled delivery of 12 different organothiols to the sensor chip to achieve 9x9 array of distinct chemiresistors

Stage of Research

Prototype being developed

Applications

- Sensing explosive volatile organic compounds (funded project) and other dangerous materials
- Medical diagnosis
- Environmental quality monitoring
- Food production

Key Advantages

- **Can** broadly test for different species in the air
- Reliable and robust chemical sensing
- Signature patterns are unique to different gases
- Electronic nose operates at low power

Patents

Patent application filed

Related Web Links – Baranidharan Raman Profile; Raman Lab