Chemical sensors and electronic noise technology require continuous sources of energy and lack the ability to operate at low power, which limits their distribution. Sensors with low power consumption, however, have poor chemical selectivity. The proposed technology is a chemically-selective percolation sensor that can operate with zero or near-zero power consumption. The sensor includes a positive and negative electrode separated by a nano-sized switch gap. A binding agent, which differs based on the target compound, binds to the switch to form an electrically conductive-selective pathway via percolation between the positive and negative electrode. The switch connects to the power supply and switches on when exposed to a programmable threshold concentration of the target compound. Such low-energy use improves device life, reduces risk of detection, and requires less battery maintenance, and which is particularly applicable to military and defense applications.

- Operates at sub-10nW or nearly-zero power.
- Permits programmable threshold for customized readings.
- Increases device life.
- Enables detection of a wider range of chemical/warfare agents.
- Reduces cost and increases portability.

**REFERENCES**


**INVENTOR PROFILE**

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