

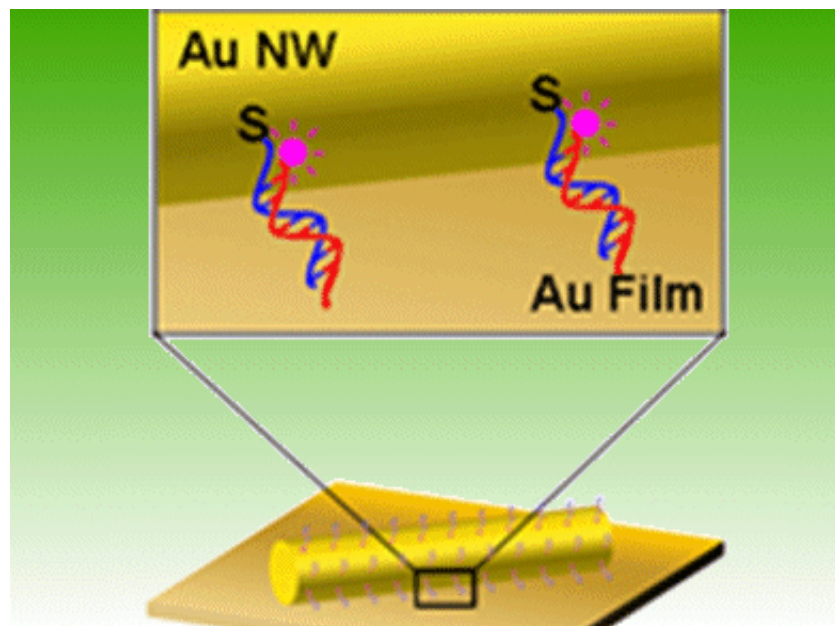
Gold and DNA Join Forces to Detect Mercury

Author: Victoria Barton

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There's something in the water — Aquatically-derived food supplies often contain the water-soluble mercuric ion (Hg^{2+}), which is toxic to humans.

Kim et al, KAIST, Korea, report an ultrasensitive and selective single gold nanowire-on-film (SNOF) surface-enhanced resonance Raman scattering sensor (SERS) for Hg^{2+} detection. The sensor is based on structure-switching double stranded DNAs; when Hg^{2+} is bound, a conformational change occurs enabling a Raman reporter to get close to the single gold nanowire-on film structure and turn on the signal.

The SNOF sensor has a detection limit of 100 pM, about 50 times lower than previously reported nucleic-acid-based Hg^{2+} SERS sensors. The sensor also exhibited good reproducibility, high selectivity, long-term stability, and reusability.

Development of a multiplex sensor of various ions may also be possible by combining nanowires modified by multiple types of nucleic-acid-binding macromolecules.

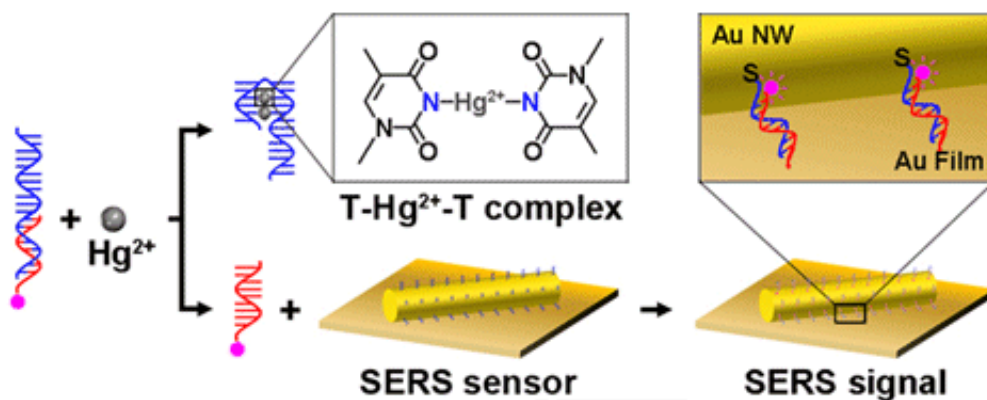


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[Au Nanowire-on-Film SERRS Sensor for Ultrasensitive \$\text{Hg}^{2+}\$ detection](#)

T. Kang, S. M. Yoo, I. Yoon, S. Lee, J. Choo, S. Y. Lee and B. Kim

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