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Single nanowire on graphene (SNOG) as an efficient, reproducible, and stable SERS-active platform

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Developing a well-defined nanostructure that can provide strong, reproducible, and stable SERS signals is quite important for the practical application of surface-enhanced Raman scattering (SERS) sensors. We report here a novel Single Nanowire (NW) on Graphene (SNOG) structure as an efficient, reproducible, and stable SERS-active platform. Au NWs having a well-defined single-crystal geometry on a monolayer graphene-coated metal film can form a well-defined, continuous nanogap structure that provides extremely reproducible and stable SERS signals. The in-NW reproducibility was verified by 2-dimensional Raman mapping, and the NW-to-NW reproducibility was verified by the cumulative curves of 32 SERS spectra. The simulation also indicated that a highly regular, line-shaped hot spot formed between the Au NW and graphene. Furthermore, SNOG platforms showed improved photostability and long-term oxidation immunity. We anticipate that SNOG platforms will be appropriate for practical biological and chemical sensor applications that demand reproducible, stable, and strong signal production.

Biography

Taejoon Kang has completed his PhD and Post-doctoral studies from KAIST. He is the Senior Researcher at Korea Research Institute of Bioscience and Biotechnology (KRIBB). He has published more than 30 papers in reputed journals.

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