

One-way SERS-substrates based on Si-nanowires

BACKGROUND

Surface Enhanced Raman Spectroscopy (SERS) is a technique suitable for single molecule spectroscopy, finding widespread application for analytical problems in medicine, environmental technology and fundamental research. Examples for its application range from detection of single molecules of an analyte on a surface, to investigation of bacteria or virus and analysis of oligonucleotides and biomarkers in human liquor. The lack of a cheap commercial, highly reproducible one-way SERS-substrate still prevents the application of this powerful technique as routine method.

TECHNOLOGY

The development of a novel type of SERS-substrate, consisting of silver and/or gold coated silicon nanowires on a silicon support, enables production of highly active and reproducible SERS-substrates at low material costs for commercial supply. As the production process can be fully automated, volume production of identical items allows for high reproducibility and comparability. The uniform and bench-stable high SERS-activity allows also two-dimensional SERS-imaging, which is of distinct advantage in medical and environmental analysis.

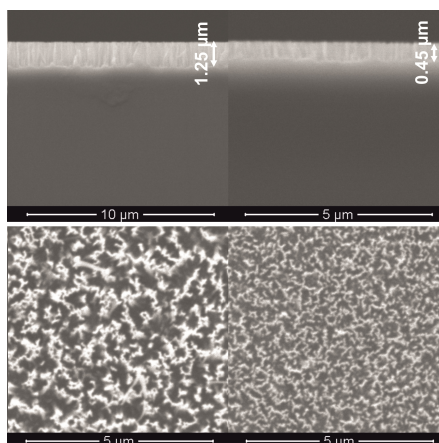


Figure 1: SEM-image of the SERS-substrate

BENEFITS

- Uniform substrates with constant highest SERS-activity
- Highly reproducible performance for routine application
- 2-dimensional SERS-imaging
- Tested long-term stability
- Low material costs, suitable for single use
- Automated production

APPLICATIONS

- Medical analytics
- Bioanalysis
- Environmental technology
- Fundamental research

REFERENCE:
M016/2017

DEVELOPMENT STATUS:
Prototypes available, ready for industrial implementation.

KEYWORDS:

- Uniform highest activity
- SERS-imaging
- Automated production
- Low production costs
- Au-coated Si-nanowires

IPR:

EP patent filed

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