Tohoku Univ. Technology

Wrinkled nanoporous metal foil

Measured signal intensities of large SERS spectra

Overview

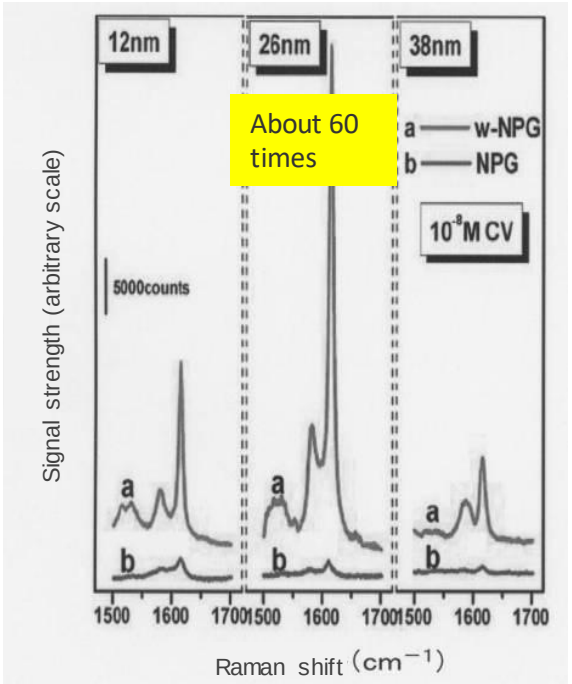
Nanoporous metal foils with pores of nm level formed on the metal foils have been fabricated. The dye of Rhodamine 6G (R6G) adsorbed on the surface of such nanoporous metal foils has significant Surface Enhanced Raman Scattering (SERS) measured by Raman scattering signal measurement, and has a detection sensitivity capable of measuring one molecule. However, a nanoporous metal foil using an alloy of gold and silver has a problem that SERS such as silver colloid cannot be obtained and one molecule of R6G cannot be measured.

The present invention has made it possible to provide a wrinkled nanoporous metal foil capable of measuring the SERS spectrum of one molecule of R6G. The present invention is characterized in that the enhancement factor is significantly enhanced by thermal shrinkage of the nanoporous metal foil to form wrinkles. The present invention comprises a nanoporous metal foil with nm pores level and wrinkles formed on the nanoporous metal foil, and a plurality of hot spots are formed on the wrinkle pile to cause surface enhancement in Raman scattering. This makes it possible to further increase the enhancement factor in surface-enhanced Raman scattering than the conventional nanoporous metal foil and to reproducibly detect up to one molecule of various molecules.

Product Application

- Molecular sensor
- Ultra-sensitive analyzer

The intensity of SERS spectrum of “wrinkled nanoporous metal foil" is about 60 times higher than that of nanoporous metal foil



IP Data

IP No.	:	JP6074609
Inventor	:	CHEN Mingwei, FUJITA Takeshi, CHANG Ling
Admin No.	:	T11-108

Contact

Tohoku Techno Arch Co., Ltd.
Please visit CONTACT here