

Supporting Information

Potential Induced Changes in Neuromedin B Adsorption on Ag, Au, and Cu Electrodes Monitored by SERS

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Comparison of SERS spectra before and after adsorption of NMB

In this work special attention was made for the preparation of the clean SERS-active electrodes before adsorption of NMB, because in general the surface Raman spectra of peptides are relatively weak and adsorbed impurities might interfere with the SERS bands of compound under investigation and change the adsorption properties of biomolecules [S1]. Figure S1 compares the SERS spectra from bare electrode surfaces and after introduction of NMB. In the case of Ag and Au electrodes, before introduction of peptide low intensity broad band in the vicinity of 1580 – 1600 cm⁻¹ is visible. This band probably originates from small

amount of the carbon contamination formed during the activation of the electrodes for SERS measurements [S1, S2]. It should be noted that the Au surface was found to be the most contaminated. Therefore, the Au electrode was additionally cleaned electrochemically in an 0.5 M H₂SO₄ aqueous solution by the following two step procedure. First, the electrode was subjected to 3-5 oxidation-reduction cycles in the potential range between 2.100 and 0.000 V with a 100 mV/s scan rate. Then, the 20 oxidation-reduction cycles were made in the potential range of 0.000 – 1.600 V. The electrode was rinsed with ultrapure water and transferred into the electrode roughening cell filled with 0.1 M NaCl solution and the potential was kept at -1.0 V for 1 minute. After these procedures, the SERS spectrum from bare Au electrode was found to be relatively clean from contaminations (Figure S1). In the case of the bare Cu electrode strong band from adsorbed phosphate anions is visible near 938 cm⁻¹ (Figure S1). Previously, adsorption of the phosphate anions at the Au, Ag, and Cu electrodes have been studied in details [S3]. Intensity of this band decreases by a factor of 2.5 after introduction of NMB into the solution. Thus, in the case of the Cu electrode both the phosphate anions and NMB are coadsorbed at the surface.

References

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- [S2] Otto, A. *J. Raman Spectrosc.* **2002**, *33*, 593.
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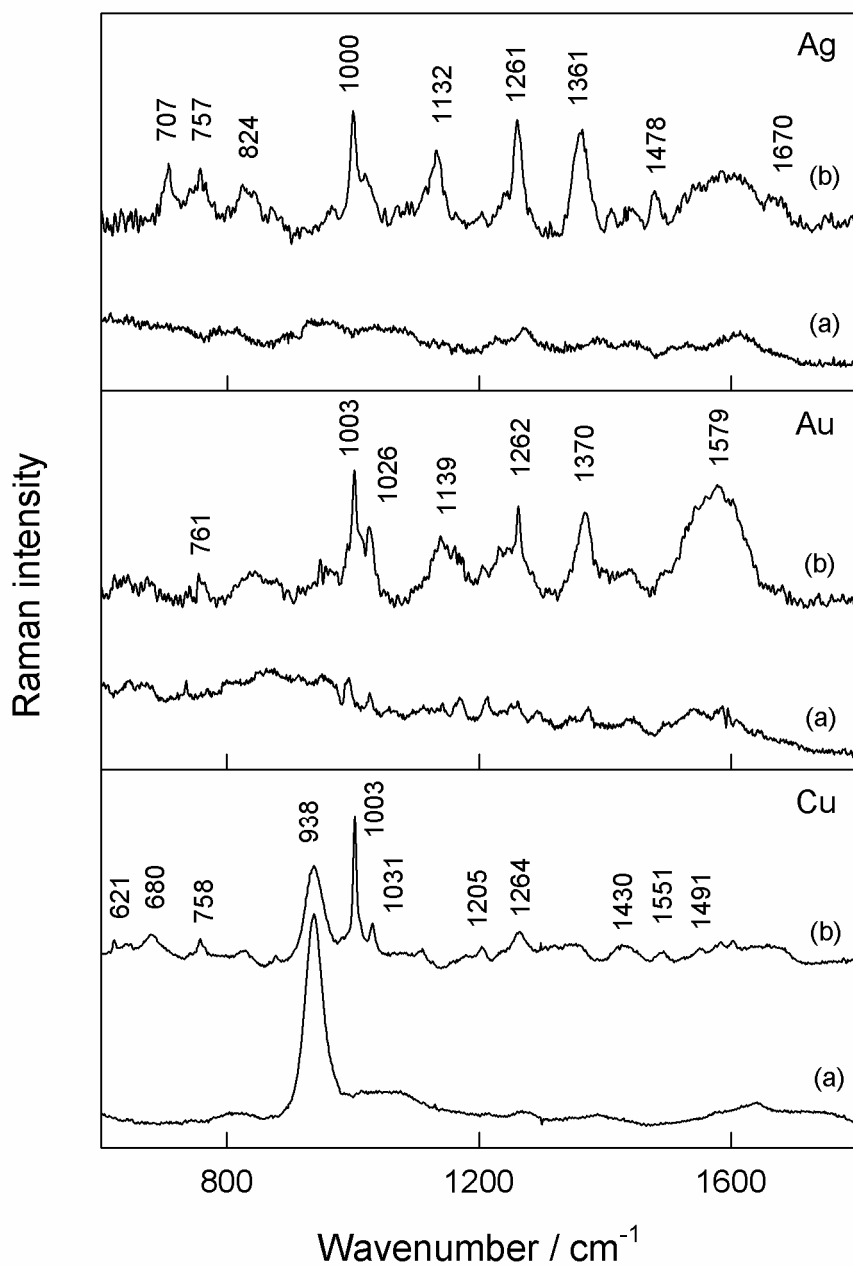


Figure S1. Comparison of the SERS spectra from the Ag, Au, and Cu electrodes before (a) and after (b) introduction of NMB at 10⁻⁵ M concentration. Measurements conditions: a 0.1 M Na₂SO₄ solution containing 0.01 M phosphate buffer (pH 7.0) at -1.20 V (Au and Ag electrodes) or -1.00 V (Cu electrode); excitation wavelength – 785 nm; laser power at the sample – 50 mW. Moving spectroelectrochemical cell was employed.