POTENTIAL DEPENDENT PLASMONIC CATALYZED CLEAVAGE OF C-BR BOND OF 8-BROMOADENINE ON SILVER ELECTRODES OF NANOSTRUCTURE

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Localized surface plasmon resonance (LSPR) has offered a unique way to trigger photocatalyzed chemical reactions on nanoscale. 8-Bromoadenine was one of the halogenated nucleobases could be applied in the tumor tissue upon irradiation as a potential DNA radio-sensitizer. To utilize the high spatial resolution properties of noble metal nanostructure and improve the selectivity of plasmon catalytic reaction, we investigated the cleavage of C-Br bond in 8-bromoadenine in electrochemical interface. Surface-enhanced Raman spectroscopy (SERS) provides an excellent opportunity to probe and monitor plasmonic photochemical reactions in situ and in real-time. The EC-SERS spectra contour map can explain the potential effect in the reaction, the plasmon catalyzed reaction rate constant in different potentials. Analyzing the intensity change of the characteristic peak of adenine in electrochemical SERS (EC-SERS) spectra was used to investigate the reaction kinetics of the cleavage of C-Br bond could be estimated by intensity integration of the SERS peak.