

Enhanced Photoassisted Field Emission of AuNPs Ligated by Alkanethiols

Fei Wang
Xingyu Gao

Shanghai Institute of Applied Physics
NO.2019 JiaLuo Road, Jiading District, Shanghai, China
Zip code: 201800

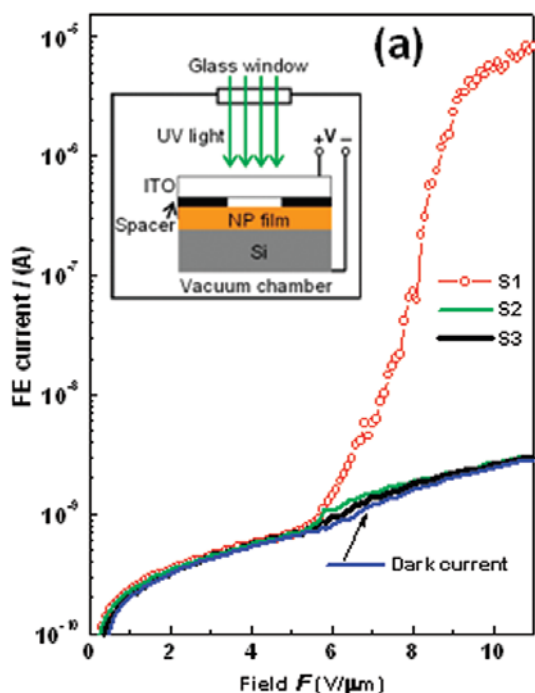


Fig. 1. Comparison of FE current of samples S1-3 under 405 nm light (40 mW/cm^2) illumination. The typical IV (or dark current) of the samples obtained without light illumination is also shown. The inset shows the FE experimental setup.

Photoenhanced field emission by AuNP interband and surface plasmon excitations is demonstrated, and enhancement factor up to 300 is observed. The photoenhancement effect allows for large scale and stable field emission from a flat 2D NP film, in contrast to the usual field emission based on high-aspectratio 1D nanostructures.[1]

Thus, we prepared several kinds of AuNPs films with different sizes and different ligands. To find out the optimum conditions of large enhancement in field emission, further work is ongoing.

[1] Xian Ning Xie, Xingyu Gao, Dongchen Qi, Yilin Xie, Lei Shen, Shuo-Wang Yang, Chong Haur Sow, and Andrew Thyne Shen Wee †, *ACS Nano*, 2009, 3 (9), p 2722-2730.