Supplementary Information

Plasmon-enhanced photoluminescence of Si-V center in diamond from a nanoassembled metal-diamond hybrid structure

Jie Song,[a] Hongdong Li,*[a] Feng Lin,*[b] Liying Wang,[a] Honglin Wu,[c] and Yanqiang Yang[c]

State Key Laboratory of Superhard Materials, Jilin University, Changchun 130012, PR China.
E-mail address: hdli@jlu.edu.cn.

Fig. S1 The schematic diagram of fabricating samples A (right part, deposited with Au layer and subsequent etched by oxygen plasmon) and sample B (left part, no Au layer deposition and un-etching, shadowed with a freestanding CVD diamond film or a single crystal diamond plate cover) on the same Si-doped CVD homoepitaxial diamond layer grown on a HTHP diamond substrate, as mentioned in the text.

Fig. S2 The XPS spectrum of Au nanoparticles in the diamond-pits.

Fig. S3 Up, the typical three dimensional AFM image of the CVD Si-doped homoepitaxial diamond layer with diamond-pits after removing Au nanoparticles by soaking in *aqua regia.* Down, the corresponding cross-sectional profile for the feature as marked in the line of 3D AFM image.

Fig. S4 The reflection spectrum of the hybrid structure of diamond-pits infilled with Au nanoparticles.

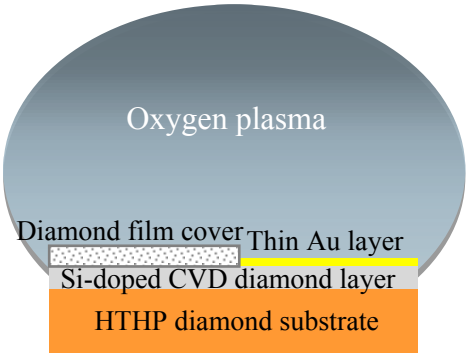

Fig. S1 The schematic diagram of fabricating samples A (right part, deposited with Au layer and subsequent etched by oxygen plasmon) and sample B (left part, no Au layer deposition and un-etching, shadowed with a freestanding CVD diamond film or a single crystal diamond plate cover) on the same Si-doped CVD homoepitaxial diamond layer grown on a HTHP diamond substrate, as mentioned in the text.

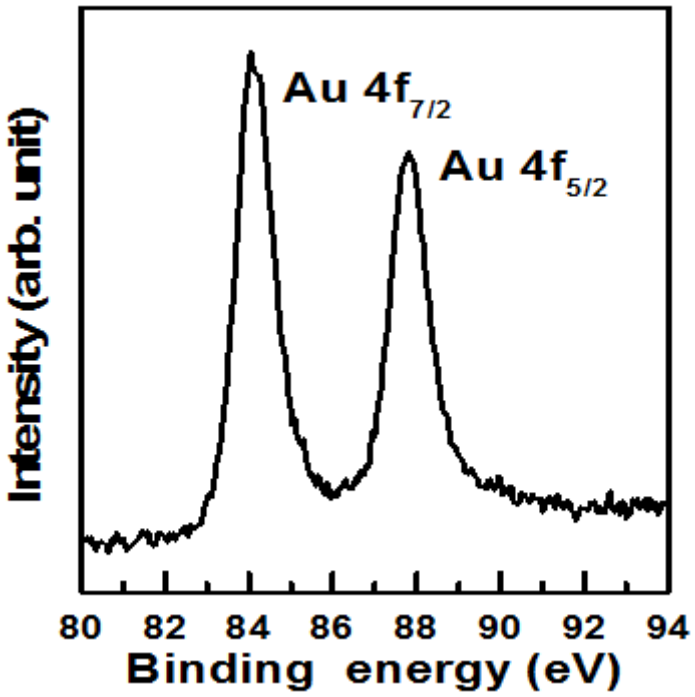

Fig. S2 The XPS spectrum of Au nanoparticles in the diamond-pits.

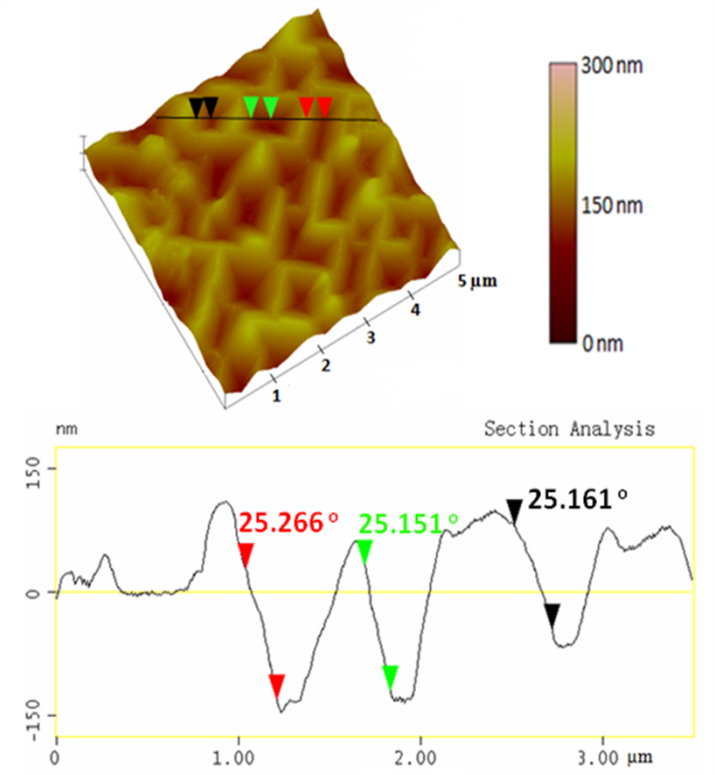

Fig. S3 Up, the typical three dimensional AFM image of the CVD Si-doped homoepitaxial diamond layer with diamond-pits after removing Au nanoparticles by soaking in *aqua regia*. Down, the corresponding cross-sectional profile for the feature as marked in the line of 3D AFM image.

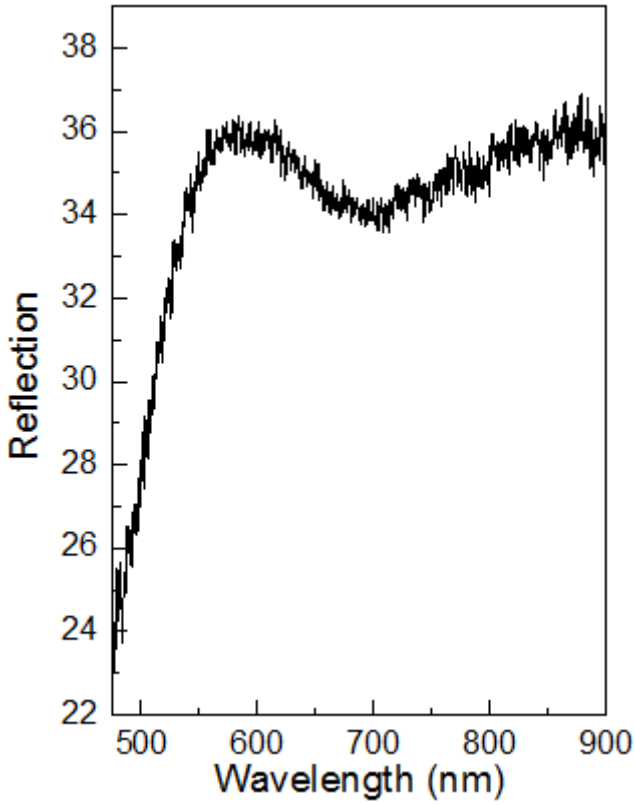

Fig. S4 The reflection spectrum of the hybrid structure of diamond-pits infilled with Au nanoparticles.