## One-pot aqueous synthesis of icosahedral Au as bifunctional candidates for enhanced glucose electrooxidation and surfaceenhanced Raman scattering

Man Xu,<sup>\*,†</sup> Lichun Zhang,<sup>\*,†</sup> Fengzhou Zhao<sup>†</sup>

<sup>†</sup>School of Physics and Optoelectronic Engineering, Ludong University, Yantai 264025, China E-mail: <u>xuman14@163.com</u>; <u>phyzlc@163.com</u>



Figure S1. a) FE-SEM images of Ih Au and b) is the size distribution of Ih Au in a).



**Figure S2.** Structural characterizations for Ih Au NPs with different orientations. a) FE-SEM image, and b) the corresponding simulated illustrations of the three-dimensional (3D) models.



Figure S3. Three orthographic views from icosahedron.



**Figure S4.** a-c) FE-SEM images for truncated Ih Au NPs, and b) the corresponding 3D simulated images with different orientations for c).



Figure S5. C 1s XPS analysis for (a) Turkevich-Au NPs and (b) Ih Au NPs.



**Figure S6.** Simulated electric field distributions for spherical, octahedral, and icosahedral Au NPs with different size (top is 50 nm and bottom is 100 nm).



Figure S7. SERS spectra of R6G with varied concentrations on Ih Au.