

Electronic Supplementary Information

The synergistic effect of graphene and polyoxometalates enhanced electrocatalytic activities of Pt-{PEI-GNs/ [PMo₁₂O₄₀]³⁻}_n composite films regarding methanol oxidation

Zhongshui Li, Xiaomei Huang, Xiaofeng Zhang, Lian Zhang and Shen Lin^{*ab}

^a *College of Chemistry & Chemical Engineering, Fujian Normal University, Fuzhou 350007,*

China. Tel/Fax: +86-591-22867399; E-mail: shenlin@fjnu.edu.cn

^b *Fujian Key Laboratory of Polymer Materials, Fuzhou 350007, Fujian, China.*

Tel/Fax: +86-591-22867399; E-mail: shenlin@fjnu.edu.cn

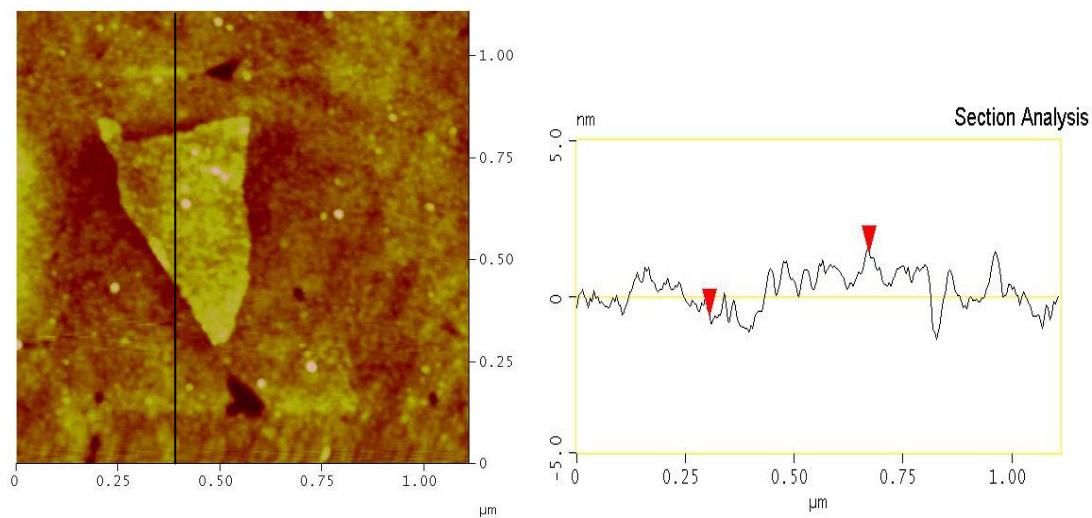


Fig. S1. AFM of PEI-GNs

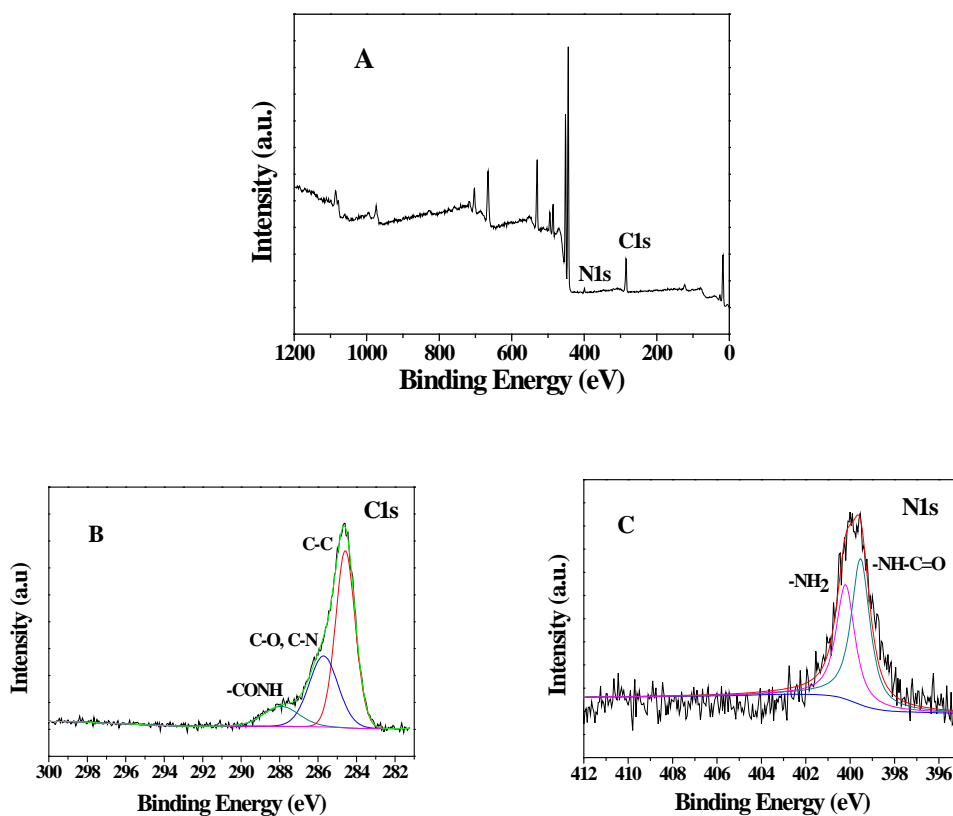


Fig. S2. XPS spectra of PEI-GNs (A) Wide scan survey spectra; (B) XPS C1s spectrum of PEI-GNs; (C) XPS N1s spectrum of PEI-GNs on ITO electrode.

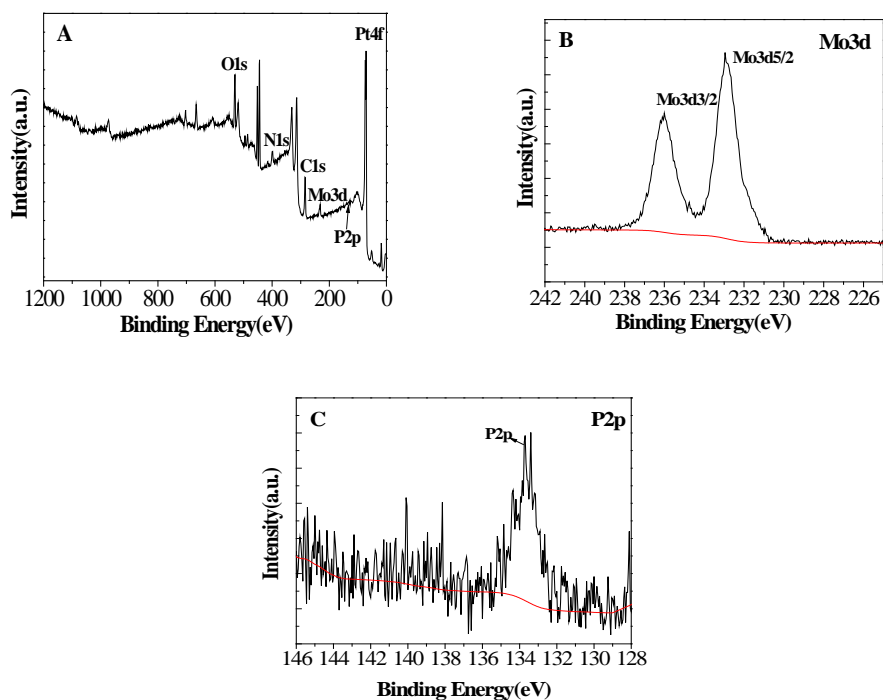


Fig. S3. XPS spectra of (A) Full-spectrum, (B) Mo3d, (C) P2p of Pt-{PEI-GNs/
PMo₁₂}₂ on ITO electrode.

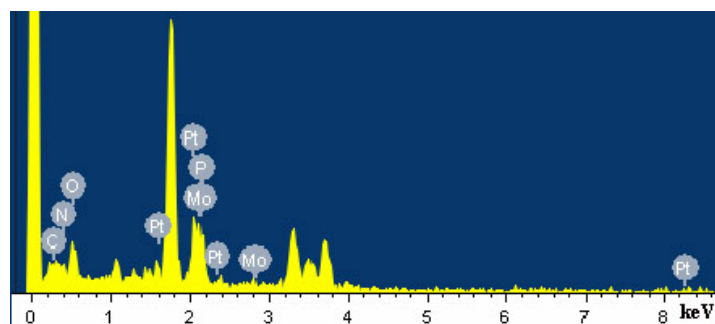


Fig. S4. The typical EDX spectra of Pt-{PEI-GNs/PMo₁₂}₂ on ITO electrode.

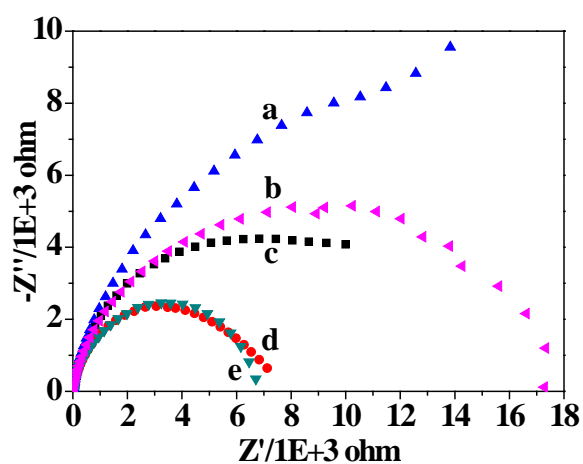


Fig. S5. Nyquist plots of EIS for methanol electrooxidation on (a) Pt/GCE, (b) Pt/{PMo₁₂}/GCE, (c) Pt-clusters/{PEI-GNs}/GCE, (d) Pt/{PEI-GNs/PMo₁₂}/GCE, (e) Pt-clusters/ {2PEI-GNs/PMo₁₂}/GCE in 0.5 M H₂SO₄ + 1.0 M CH₃OH solution.