

Supporting information

Niobium-Doped Titanium Dioxide on Functionalized Carbon Supported Palladium Catalyst for Enhanced Ethanol Electro-Oxidation

Weichuan Xu,^a Litao Yan,^a Huiqiang Wang,^b Steven Liaw,^a Hongmei Luo^{*a}

^aDepartment of Chemical and Materials Engineering, New Mexico State University, New
Mexico 88003, United States

^bCollege of Mechanical and Electrical Engineering, Agricultural University of Hebei,
Baoding 071001, China

*Corresponding author: hluo@nmsu.edu (H. Luo)

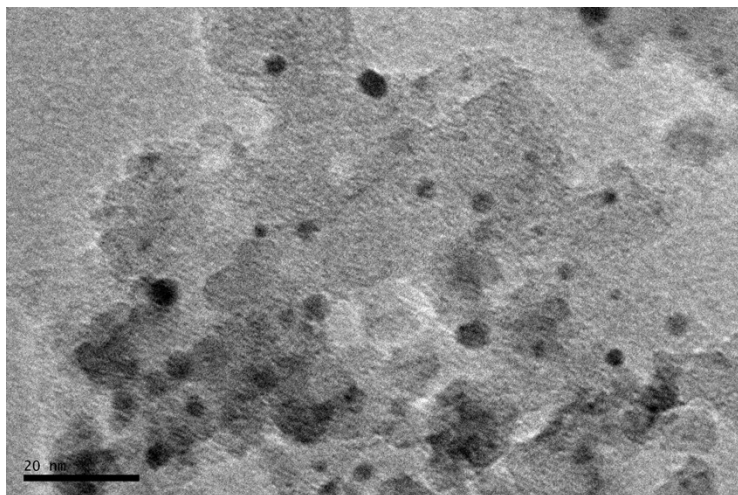


Fig. S1. HRTEM of Pd/Nb-TiO₂-C.

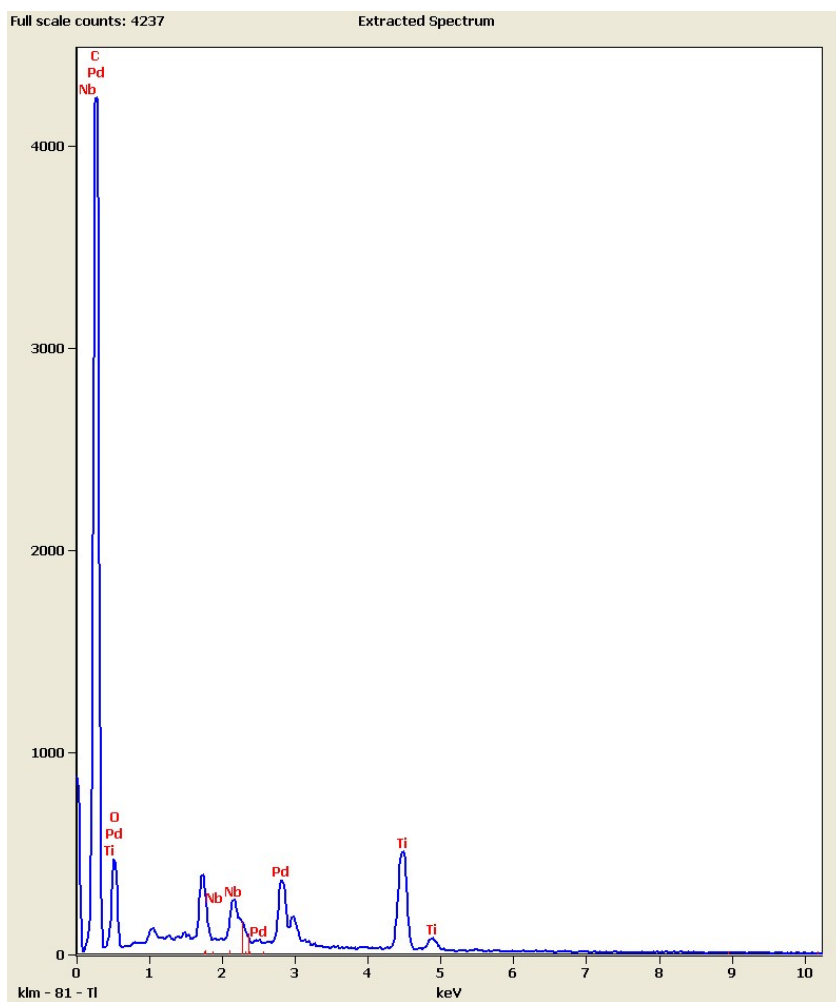


Fig. S2. Energy-dispersive X-ray spectroscopy of Pd/Nb-TiO₂-C.

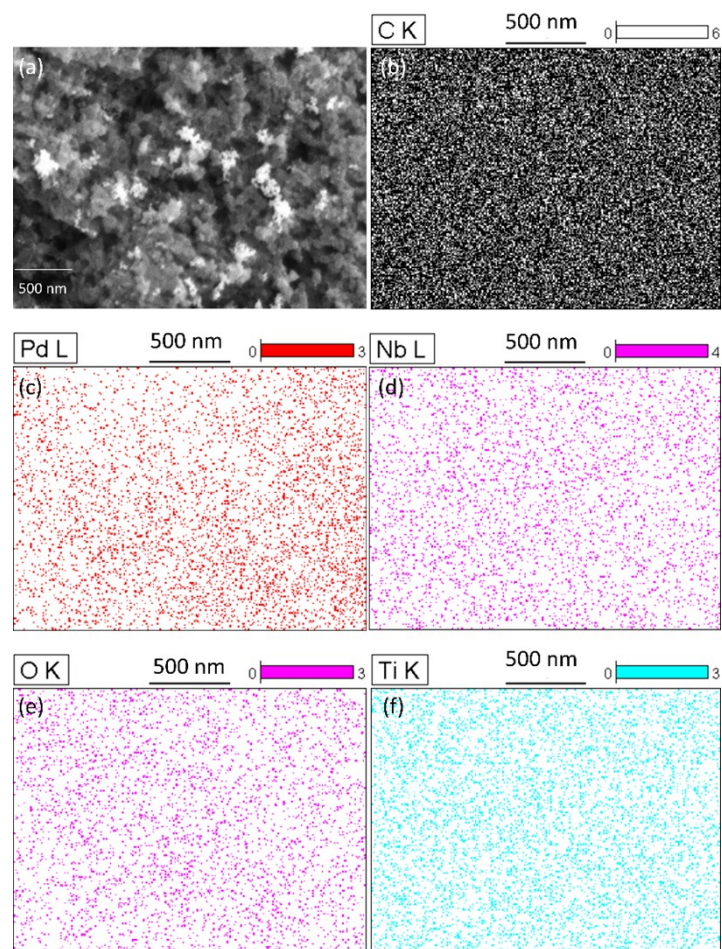


Fig. S3. (a) SEM image of Pd/Nb-TiO₂-C, EDS mapping of (b) C, (c) Pd, (d) Nb, (e) O and (f) Ti.

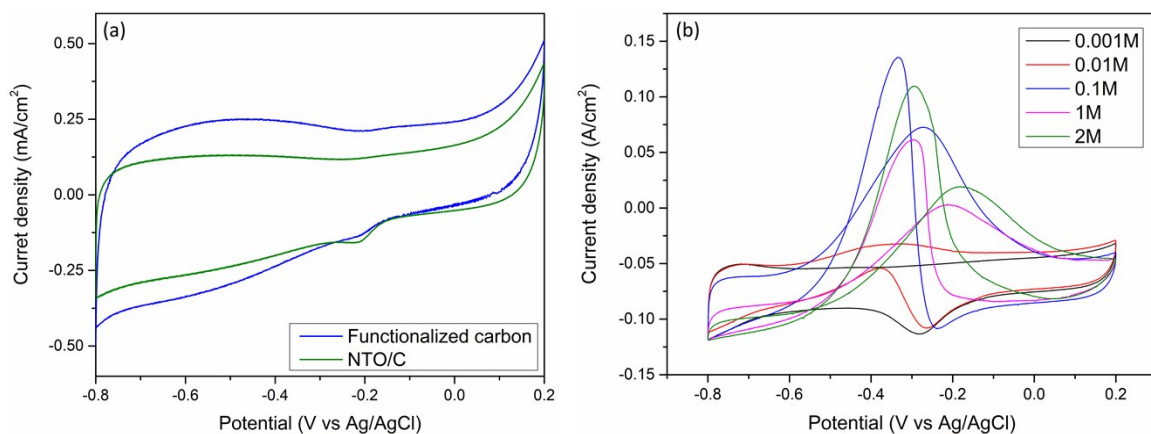


Fig. S4. (a) CV of functionalized carbon and niobium-doped titanium dioxide on functionalized carbon (Nb-TiO₂-C) in 1 M KOH and 1 M Ethanol solution with a scan rate of 20 mV/s; and (b) Ethanol electro-oxidation by Pd/Nb-TiO₂-C in 1M KOH solution with different ethanol concentrations with a scan rate of 20 mV/s.