

The Construction of One-Dimensional Pd Nanoparticles/CNFs Composite Catalyst Attached to the G-reactor@Ag and Its Application in Suzuki Coupling Reaction

Shoujun Guo,^a Jie Bai, ^{*a} Haiou Liang,^a and Chunping Li,^a

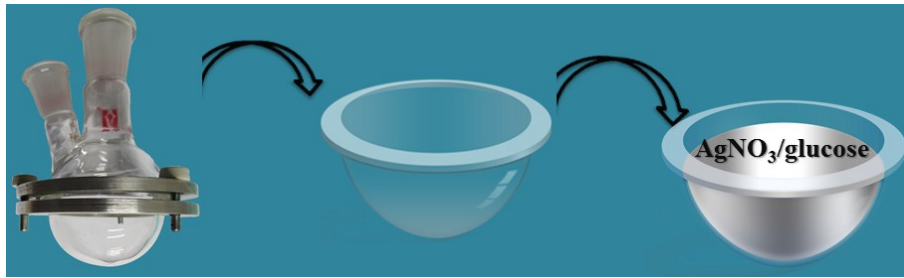
Experimental

Materials

All reagents were used without further treatment. Polyacrylonitrile (PAN, Mw = 80000) was purchased from Kunshan Hong Yu Plastic Co. Ltd. N,N-Dimethylformamide (DMF, C₃H₇NO, AR, 99.5%) was provided by Tianjin Fengchuan Chemical Reagent Technology Co. Ltd. Phenylboronic acid (98%), Anhydrous ethanol (C₂H₆O, AR, 99.7%), Palladium chloride (PdCl₂, AR), and iodobenzene (C₆H₅I, CP, 97%) were products of Sinopharm Chemical Reagent (China). The others were purchased from Alfa Aesar.

Characterization

The morphology of the samples was observed by scanning electron microscopy (SEM, Hitachi S-3400N, Japan), field emission scanning electron microscopy (FE-SEM, Quanta 650 FEG) and transmission electron microscopy (TEM, Jeol, JEM-2010, Japan). FT-IR spectra were obtained on a fourier transform infrared spectrometer (FT-IR, Thermo Nicolet Nexus 670, USA). X-ray photoelectron spectra (XPS) were carried out on an escalab 250xi spectrometer (XPS, Escalab 250xi, ThermoFisher Scientific, USA). The H₂-TPR tests were performed on a chembet pulsar TPR/TPD (Chembet Pulsar TPR/TPD, Quantzchrome, USA). The Suzuki products were analyzed by Gas Chromatograph (Shimadzu, GC-2010 Plus) with FID using an Rtx-5 column and N₂ as the carrier gas.



Scheme S1 Schematic illustration of the construction of G-reactor@Ag

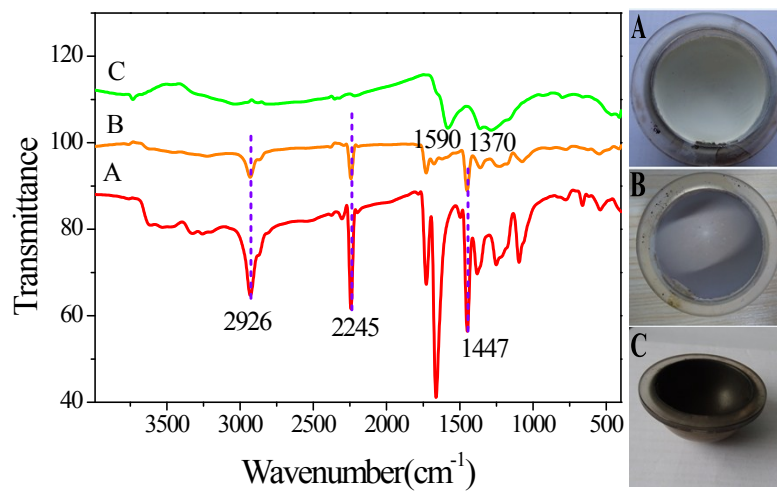


Fig. S1 FT-IR spectra of PdCl₂/PAN (A), Pd/PAN (B), Pd/CNFs (C) and their corresponding reactor photo.

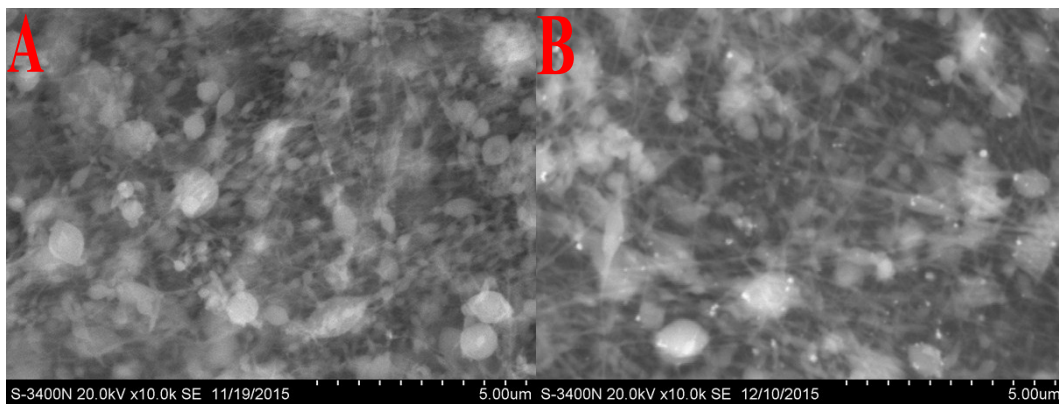


Fig S2. SEM images of (A) fresh G-reactor@Ag-CNFs-Pd and (B) G-reactor@Ag-CNFs-Pd after eighth runs.