Supporting Information

Composite Fibers as a Multifunctional Catalyst Support for the Upgradation of Lignin-based Chemicals

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Table S1. Molecular weight of tannin.

Mn	Mw	DPI
1426	1575	1.10

Table S2. Dispersion of diameters of fibers and Pd particles.

Catalyst	Pd/8% PAN-Tan	Pd/12% PAN-Tan	Pd/16% PAN-Tan	16% PAN
Fiber diameters	458 nm	81 nm	47 nm	9 nm
particle sizes	2.52 nm	3.42 nm	2.86 nm	

Table S3. Electrical conductivity of spinning solution.

Spinning solution	16% PAN	16% PAN-Tan
Specific conductance (μS/cm)	182.1	274.5

Table S4. T_{onset} and T_{max} of the fibers based on thermogravimetric analysis.

Catalyst	16% PAN	8% PAN-Tan	12% PAN-Tan	16% PAN-Tan
T_{onset} (°C)	286	288	290	284
T_{max} (°C)	293	297	296	292

Table S5. Catalyst recycling.

Number of reuses	1	2	3	4	5
VAL yield (%)	97.3	96.9	97.8	96.1	98.1

Table S6. Adsorption of Pd^{2+} on the fibers.

Catalyst	16% PAN	Pd/8% PAN-Tan	Pd/12% PAN-Tan	Pd/16% PAN-Tan
Adsorption rate (%)	76.8	88.9	93.0	97.3

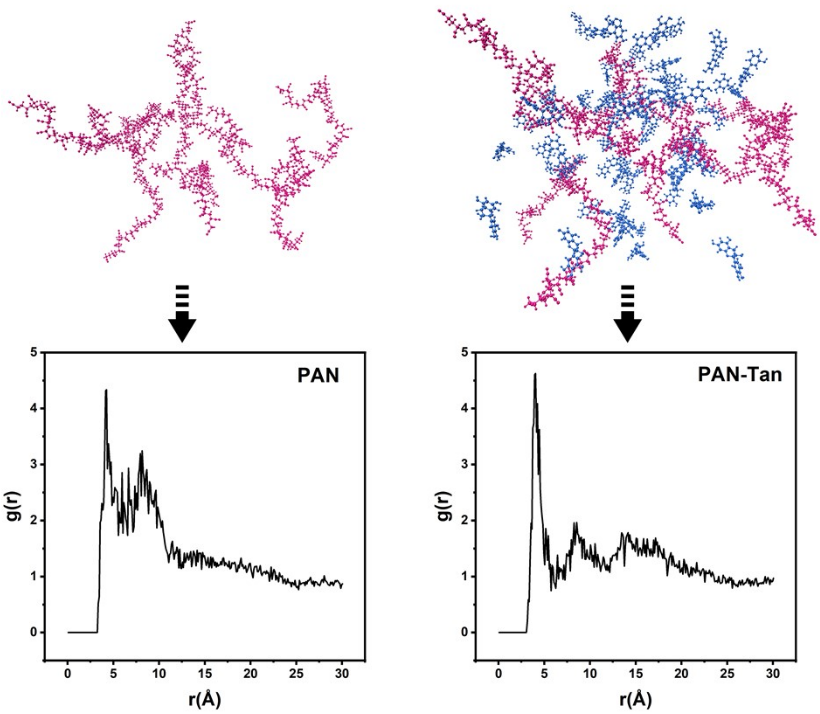

Figure S1. Radical distribution functions in PAN in different systems.

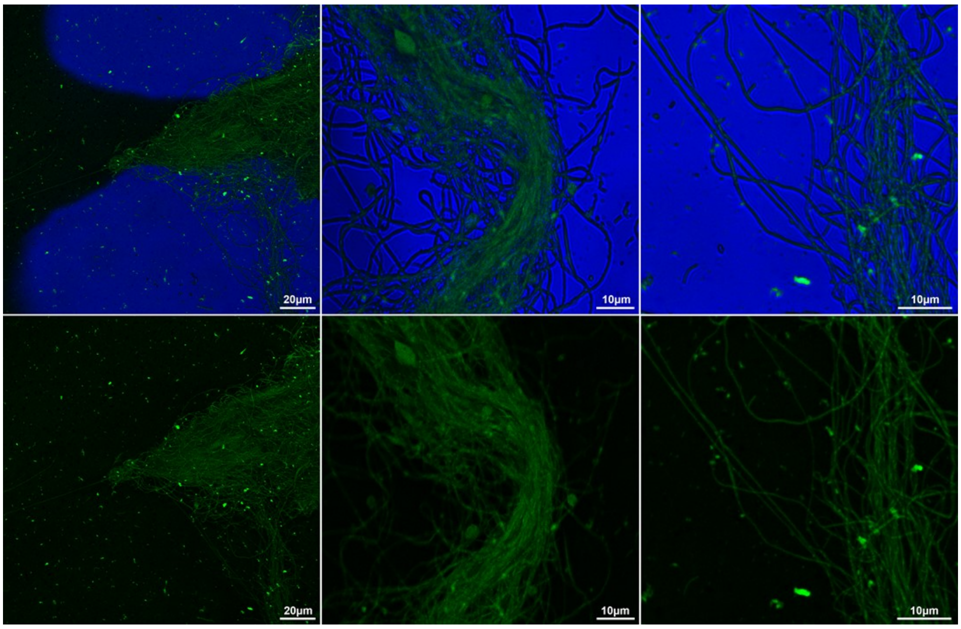

Figure S2. Fluorescence spectra of 8% PAN-Tan fibers.

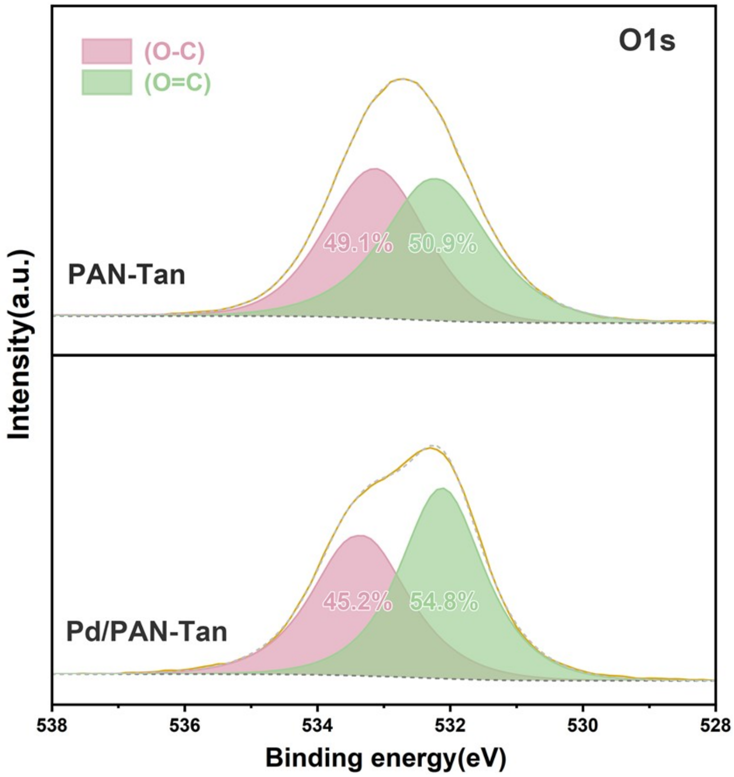

Figure S3. XPS O1s spectra of catalyst before and after Pd loading

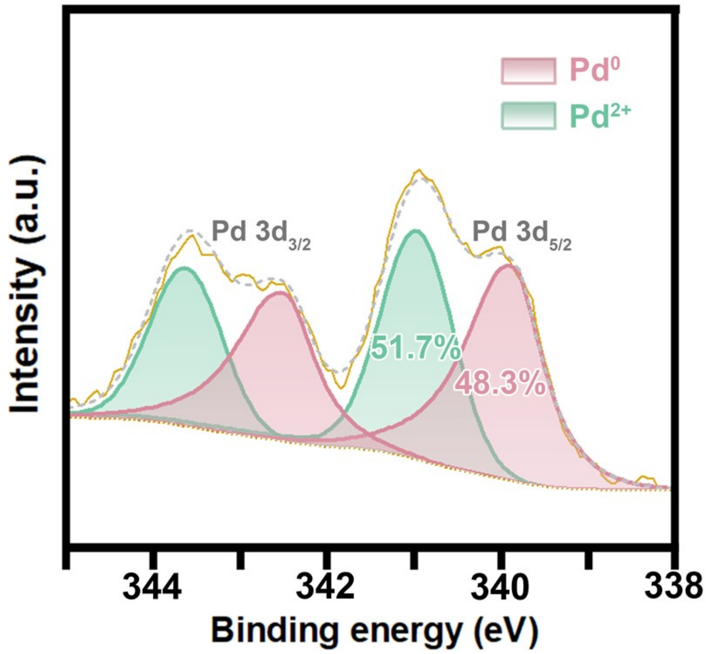

Figure S4. XPS pattern of the catalyst after the fixed bed reaction.

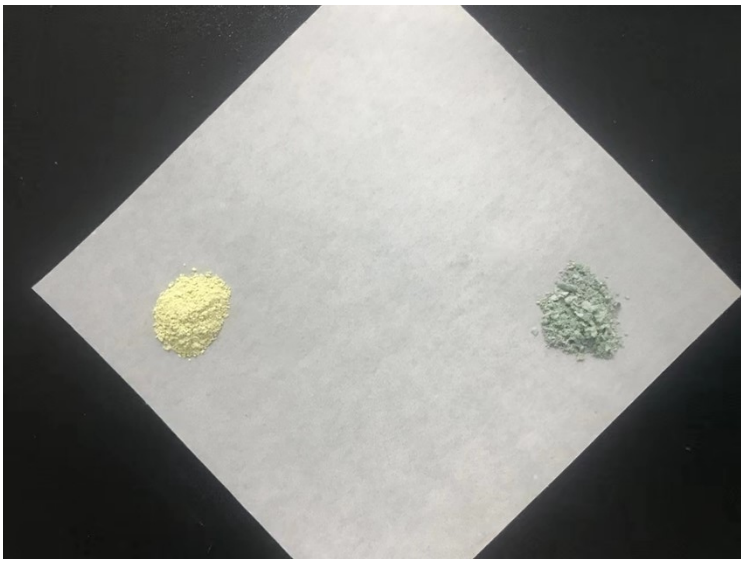

Figure S5. Diagram of catalyst before and after hydrogen overflow test.