Supporting Information

Preparation of valeric acid and valerate esters from biomass-derived levulinic acid using metal triflates + Pd/C

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1. Preparation of catalyst $W(OTf)_6$

①. Experimental Instrument

Round-bottom flask (100mL), distillation apparatus (equipped with a microdistiller, distilling tube, a thermometer with a ground glass joint, three round-bottom flask (50mL)), drying tube (filling with anhydrous calcium chloride), rotor flow meter, oil bath heating device, and drying tower (filling with 4Å molecular sieve)

②. Experimental Procedure

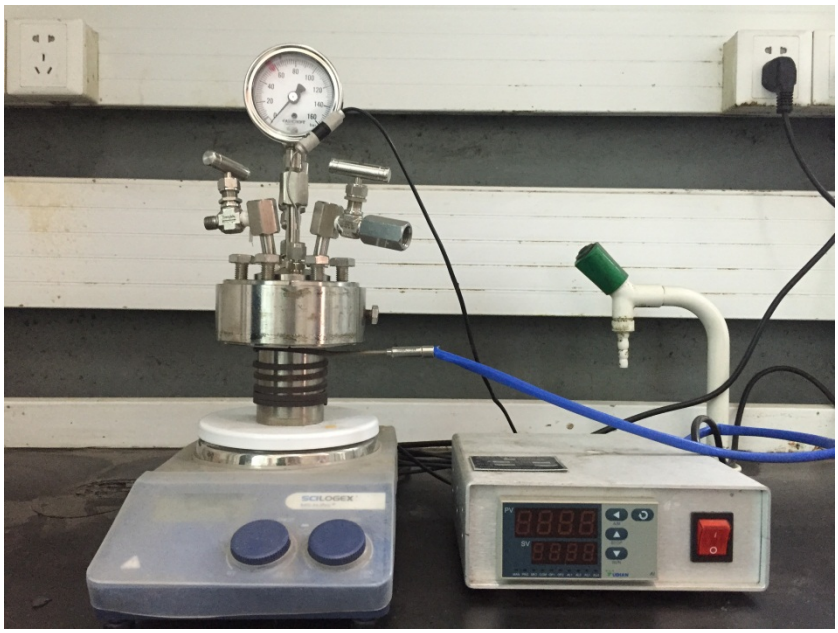
Weigh 5g of tungsten hexachloride into a 100mL round-bottom flask and added 25g of trifluoromethanesulfonic acid in an anhydrous and oxygen-free condition. The reaction was processed in an oil bath heater, heated to $50^{o}C$ for 48h with argon shield. During the reaction, carbonization of the cotton in the drying tube occurs and the drying tube should be replaced promptly.

After the reaction was completed, the reaction bottle was removed from the drying tube and connected to a micro-distiller. Trifluoromethanesulfonic acid was removed by vacuum distillation.

Under argon protection, the product was washed to neutral with anhydrous ether. Residual anhydrous ether can be drained with an oil pump.

2. Experimental facility

The experimental facility was as follow: a reactor equipped with a 50 ml autoclave, connecting to a temperature controller and a magnetic stirrer.



3. Results of ICP test

Table S1. Results of ICP test on fresh Pd/C and used Pd/C

Entry	Pd/C	Content
1	Fresh Pd/C	9.24%
2	Used Pd/C	7.87%

4. Results of BET test

Table S2. Results of BET test on fresh Pd/C and used Pd/C

	Fresh Pd/C	Used Pd/C
BET Surface Area	695.8019 m^2/g	167.7731 m^2/g
Single point surface area	704.6102 m^2/g	168.7327 m^2/g

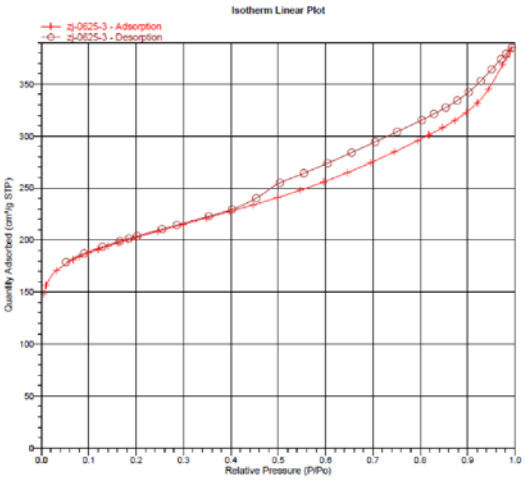


Fig. S1. Isotherm Linear Plot of Fresh Pd/C

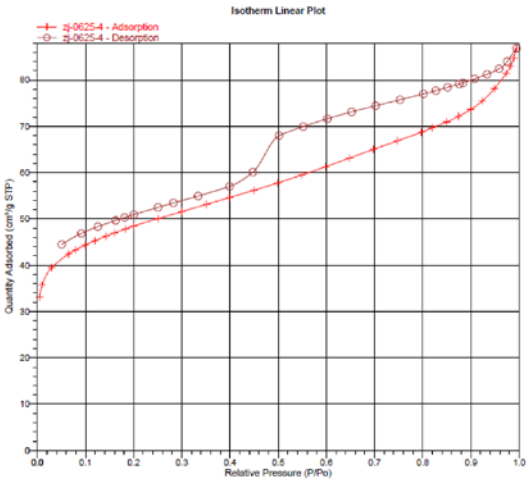


Fig. S2. Isotherm Linear Plot of Used Pd/C