

Supplementary Information

Scrap waste automotive converter as efficient catalysts for continuous-flow hydrogenations of biomass derived chemicals

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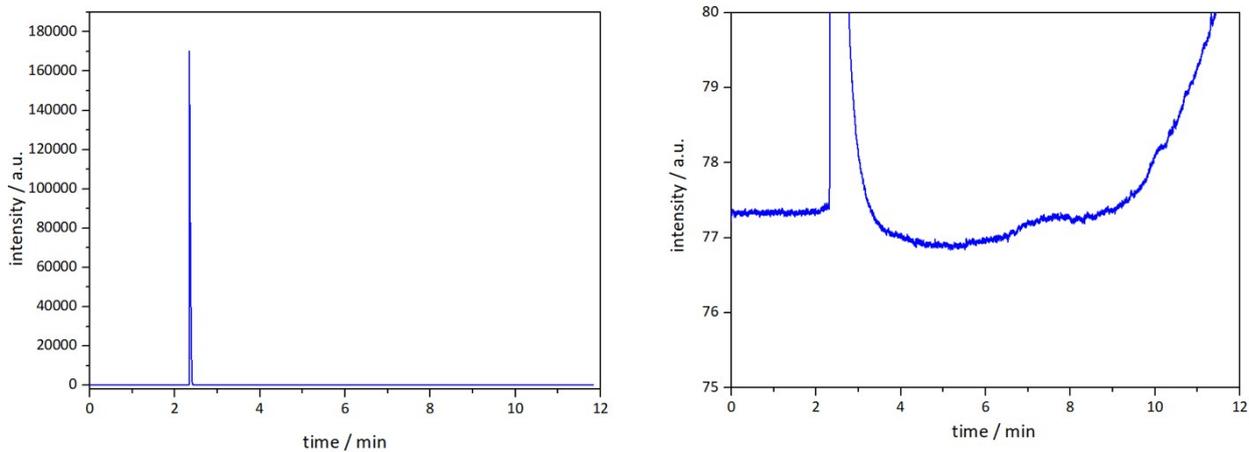


Figure S1. GC chromatogram graph of fluxed toluene in freshly made SCATs cartridge

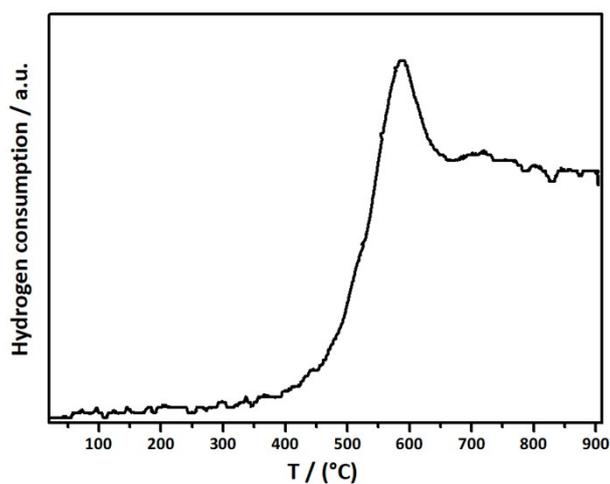


Figure S2. TPR analysis of SCATs. The data indicates that the reduction of the metals (activation) started around 500°C, with a peak occurring at 560°C. However, due to the thermic inertia of the systems, the center of the peak can be fixed to ca. 500°C.

Table S1. ICP-MS qualitative analysis of SCATs

Detected Element
Mg
Al
Si
Fe
Ce
Ti
Zn
Zr
Pt

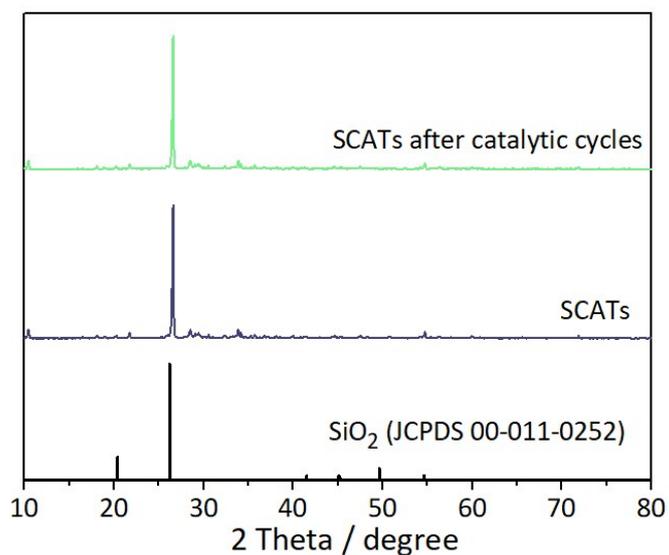


Figure S3. XRD pattern of SCATs before and after the catalytic tests

As illustrated in S3, the most intense diffraction peaks observed at 2θ values of 21.72° , 28.49° and 54.67° could be indexed to the (1 0 0), (0 1 1), (2 0 2) planes of SiO_2 with hexagonal structure (JCPDS 00-011-0252), one of the major component of CATs. All remaining diffraction peaks could hardly be assigned in any case due to their low diffraction line intensities.

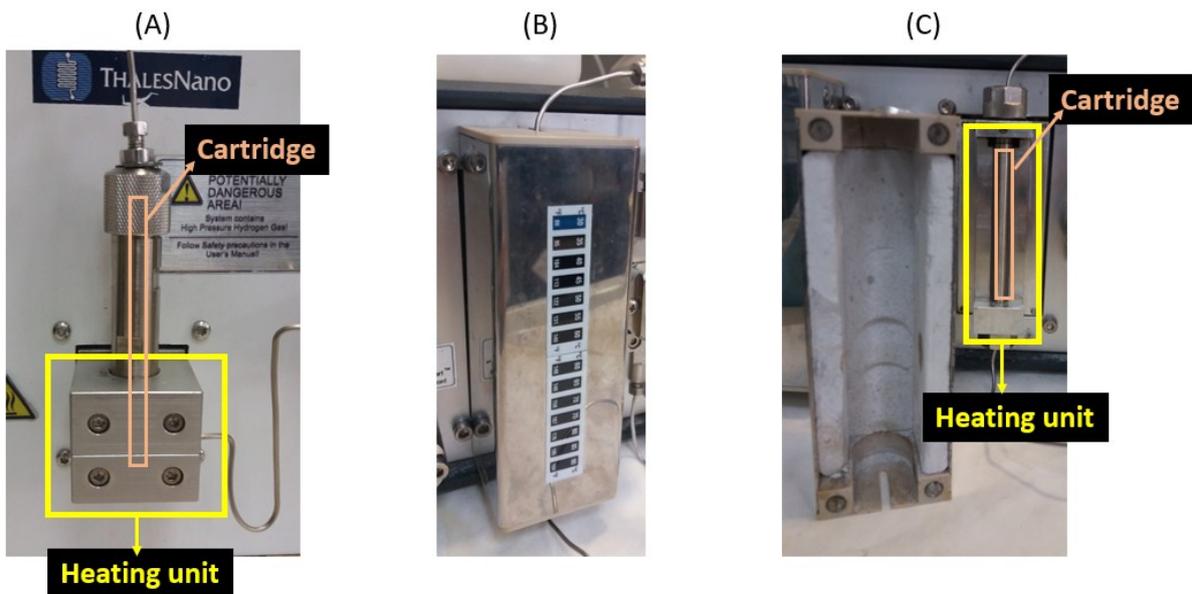


Figure S4. Photos of the heating systems with highlighted heating unit of (A) H-Cube®, (B) X-Cube™ covered and (C) uncovered.

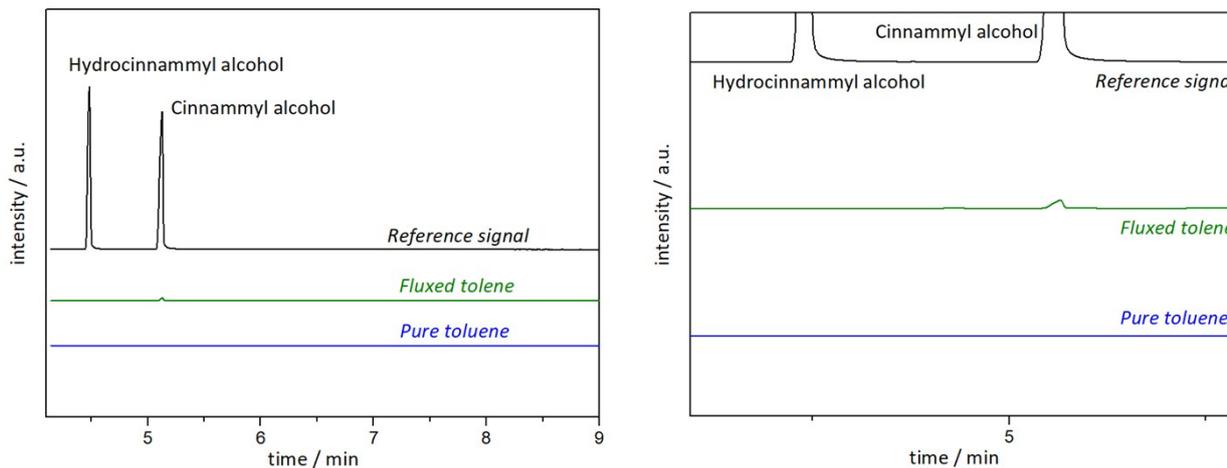


Figure S5. GC-MS chromatogram graph of toluene fluxed for washing cycle of SCATs-cartridge after long-term stability tests.

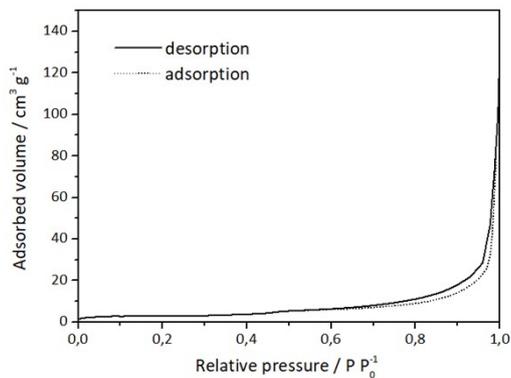


Figure S6. N₂ adsorption–desorption isotherm of SCATS