

Figure S1. SEM of the products prepared by the waste tires pyrolytic carbon in 0.3 mL of H₂O at different times and temperatures.

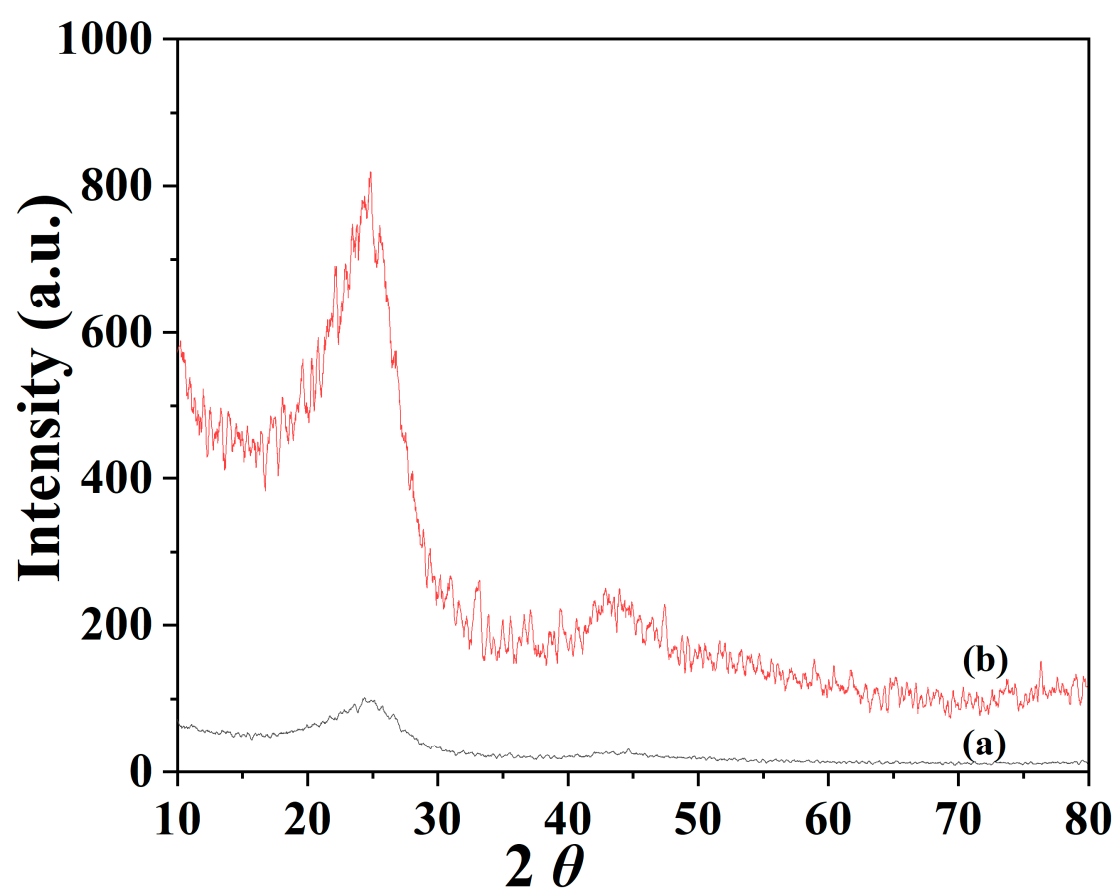


Figure S2. XRD of (a) Pt/C and (b) Pt/CNTs.

Table S1. Comparison of dehydrogenation of MCH over Pt-based catalysts at 300 °C from the literature.

Catalysts	Rate of liquid MCH (mL/min)	Catalyst weight	Pt loading content (wt %)	Conversion of MCH (%)	H ₂ evolution rate (mmol/g _{Pt} /min)	Ref.
Pt/SBA-15	0.03	0.05	3	65 (initial)	308.6	[1]
Pt/Mg-Al-O	-	-	0.2	-	145.1	[2]
Pt/Al ₂ O ₃	-	-	0.2	-	148.7	[2]
Pt/pyrolytic waste activated carbon	0.03	0.554	0.4	95	305.3	[3]
PtSn-5/Mg-Al-O-350	0.1	0.5	2	90.5	214.8	[4]
Pt/CNTs	0.03	0.3	0.2	28.6	336.9	This work

References

1. Chen, A.; Zhang, W.; Li, X.; Tan, D.; Han, X.; Bao, X. One-pot encapsulation of Pt nanoparticles into the mesochannels of SBA-15 and their catalytic dehydrogenation of methylcyclohexane. *Catal. Lett.* **2007**, *119*, 159–164. <https://doi.org/10.1007/s10562-007-9214-6>.
2. Sugiura, Y.; Nagatsuka, T.; Kubo, K.; Hirano, Y.; Akitoshi, N.; Miyazawa, K.; Iizuka, Y.; Furuta, S. Dehydrogenation of methylcyclohexane over Pt/TiO₂-Al₂O₃ catalysts. *Chem Lett* **2017**, *46*, 1601–1604. <https://doi.org/10.1246/cl.170722>
3. Zhang, C.; Liang, X.Q.; Liu, S.X. Hydrogen production by catalytic dehydrogenation of methylcyclohexane over Pt catalysts supported on pyrolytic waste tire char. *Int. J. Hydrogen Energy* **2011**, *36*, 8902–8907. <https://doi.org/10.1016/j.ijhydene.2011.04.175>.
4. Yan, J.; Wang, W.Y.; Miao, L.; Wu, K.; Chen, G. L.; Huang, Y. P.; Yang, Y. Q. Dehydrogenation of methylcyclohexane over Pt-Sn supported on Mg-Al mixed metal oxides derived from layered double hydroxides. *Int J Hydrogen Energy* **2017**, *43*, 9343–9352. <https://doi.org/10.1016/j.ijhydene.2018.04.003>