Oxidation-acid synergism in Pt-HSiW/CeO_2 catalysts: effect of Pt loading on chlorobenzene degradation pathway and by-product inhibition

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Support information

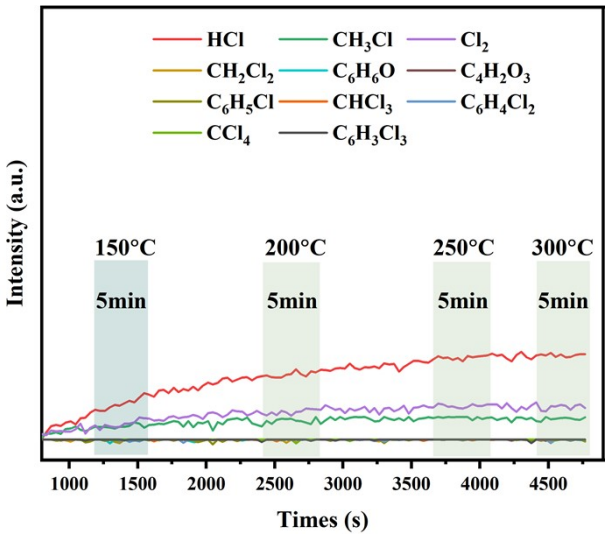

Fig. S1 GC-MS spectrum of intermediate products in Cat-2.0 sample as a function of temperature

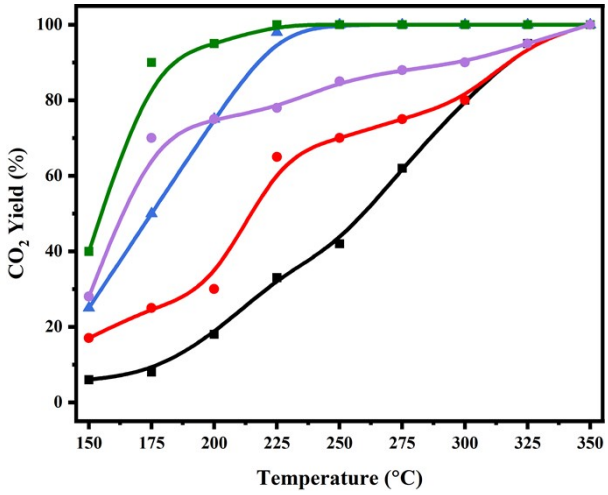

Fig. S2 CO_2 yield of the catalysts

As shown in Fig. S1, GC-MS analysis indeed observed HCl, Cl_2, and CH_3Cl as the primary products, with other polychlorinated byproducts present at lower concentrations. While the presence of these byproducts indicated some degree of chloride generation, their quantities did not reach levels that posed a significant threat to environmental safety and sustainability. Furthermore, CO_2 selectivity testing provided additional evidence regarding the reaction pathway of chlorobenzene conversion and the relationship between catalysts activity and byproduct formation (Fig. S2). Although a lag phenomenon was indeed observed in the reaction,

potentially related to the asynchronous conversion process from chlorobenzene to CO_2, the generation of byproducts did not significantly affect the long-term performance of the catalyst.