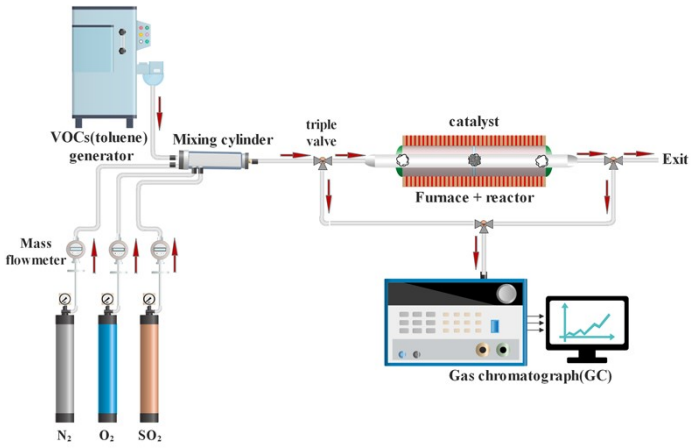

Figure S1 Schematic of the experimental setup for the catalytic activity

Table S1 Temperatures for T50 and T90 of $LaCo_{1-x}M_xO_3$ (M=Fe, Cr, Cu; x=0, 0.2, 0.4 and 0.6) perovskite catalysts

Samples	T50 (°C)	T90 (°C)
$LaCoO_3$	268	411
$LaCo_{0.8}Fe_{0.2}O_3$	228	366
$LaCo_{0.6}Fe_{0.4}O_3$	218	363
$LaCo_{0.4}Fe_{0.6}O_3$	266	408
$LaCo_{0.8}Cr_{0.2}O_3$	248	402
$LaCo_{0.6}Cr_{0.4}O_3$	242	384
$LaCo_{0.4}Cr_{0.6}O_3$	257	393
$LaCo_{0.8}Co_{0.2}O_3$	266	435
$LaCo_{0.6}Co_{0.4}O_3$	261	410
$LaCo_{0.4}Co_{0.6}O_3$	291	464

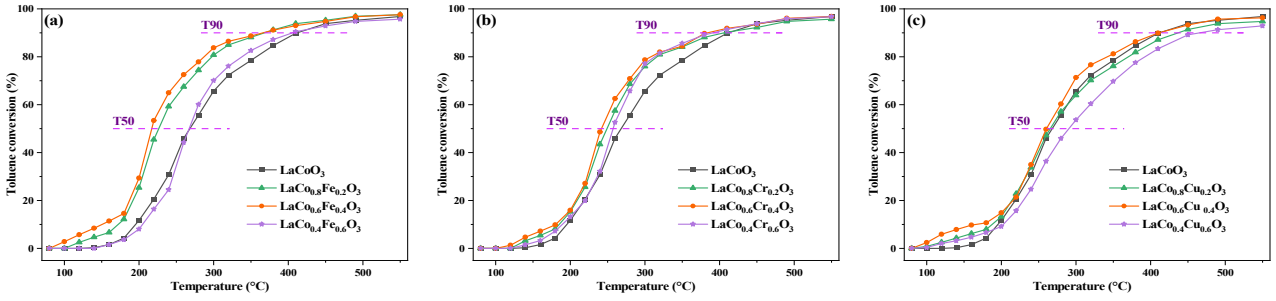

Figure S2 Ignition curves for toluene oxidation over $LaCo_{1-x}Fe_xO_3$ (a), $LaCo_{1-x}Cr_xO_3$ (b) and $LaCo_{1-x}Cu_xO_3$ (c) (x=0, 0.2, 0.4, 0.6)

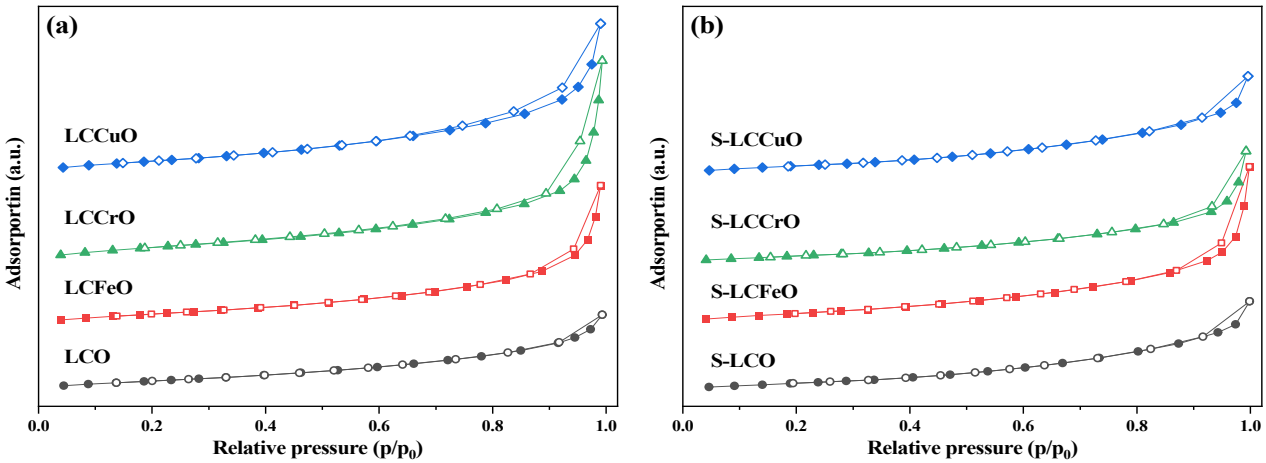

Figure S3 N_2 adsorption-desorption isotherms of fresh catalysts (a) and sulfur-aged catalysts (b)

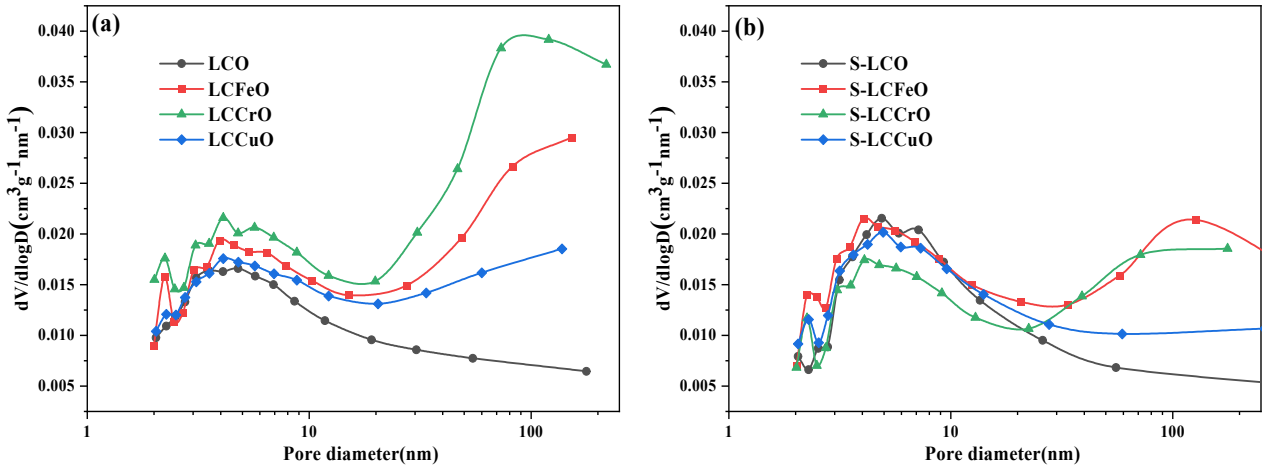

Figure S4 Pore size distributions of fresh catalysts (a) and sulfur-aged catalysts (b)

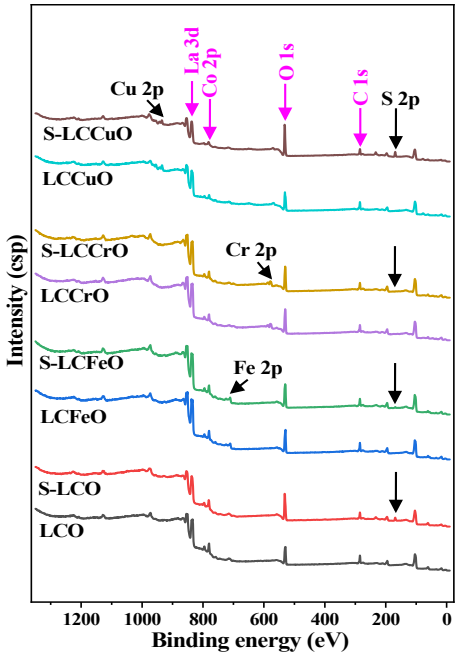

Figure S5 XPS full-spectrum for different elements in fresh and sulfur-aged samples.