

## SUPPORTING INFORMATION

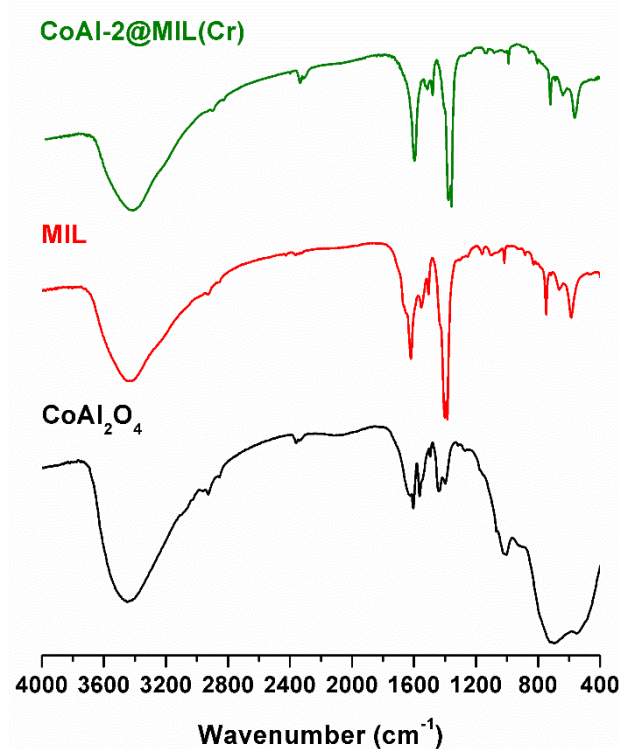
### Cobalt Aluminate Nanoparticles Supported on MIL-101 Structure: Catalytic Performance Investigation

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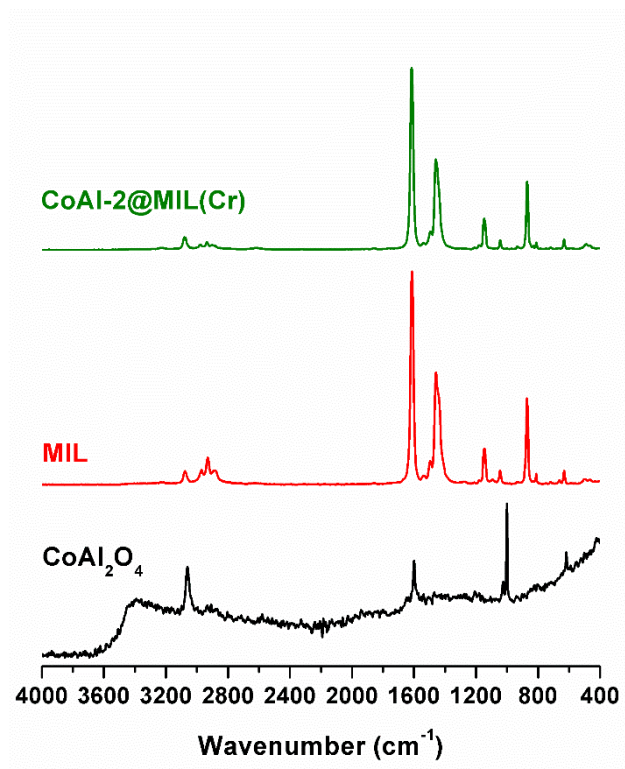
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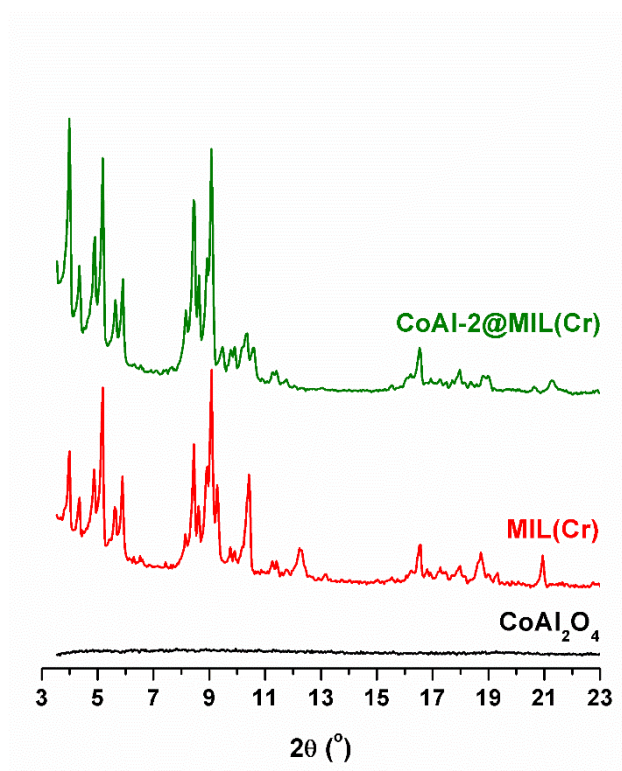
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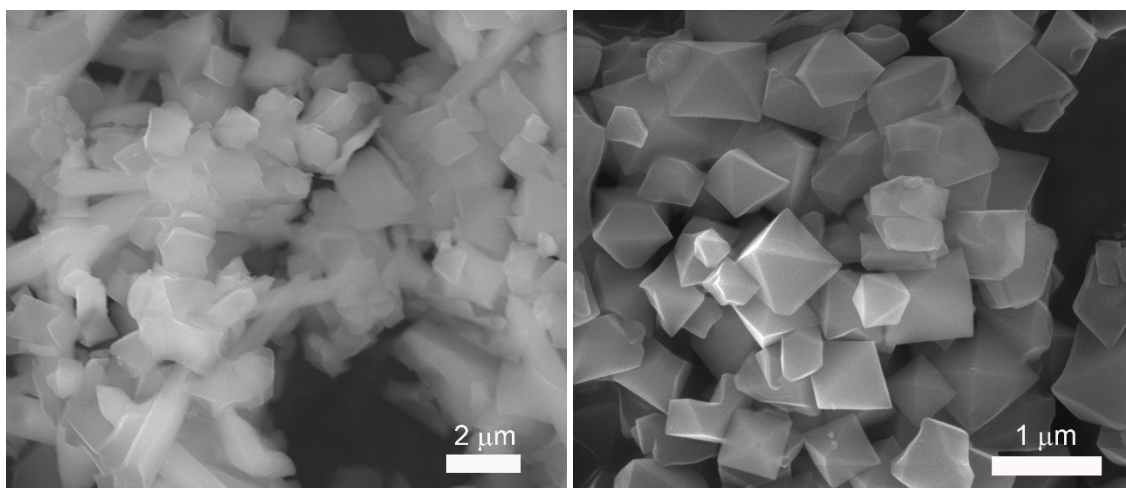
**Figure S1.** FT-IR spectra of CoAl<sub>2</sub>O<sub>4</sub> nanoparticles, the solid support MIL-101 and the CoAl-2@MIL(Cr) composite.



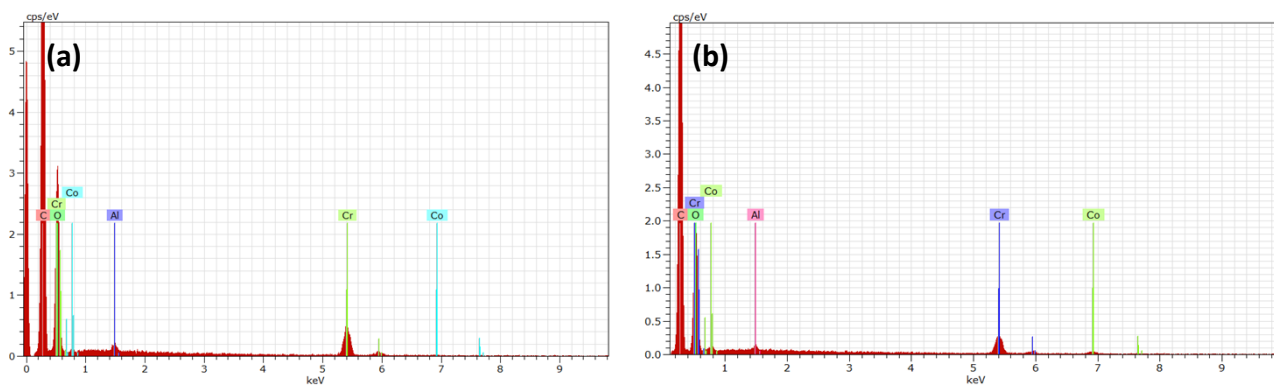
**Figure S2.** FT-Raman spectra of CoAl<sub>2</sub>O<sub>4</sub> nanoparticles, the solid support MIL-101 and the CoAl-2@MIL(Cr) composite.



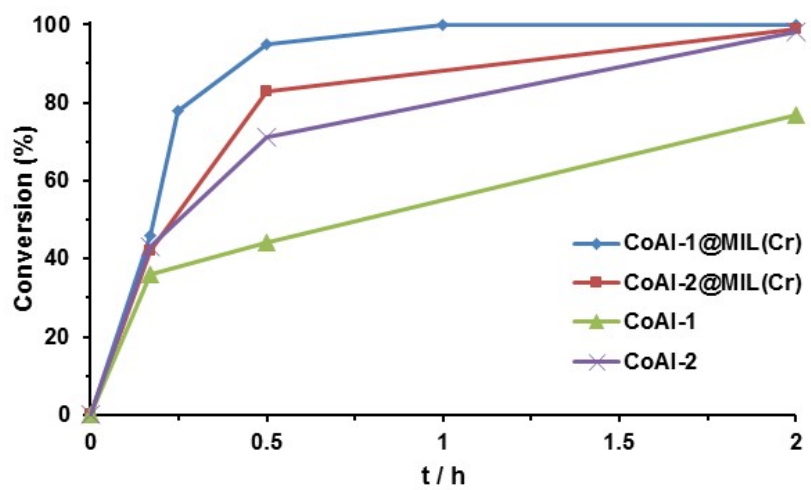
**Figure S3.** Powder XRD patterns of  $\text{CoAl}_2\text{O}_4$  nanoparticles, the solid support MIL-101 and the  $\text{CoAl-2@MIL(Cr)}$  composite in the  $3\text{-}23^{\circ}$  range.



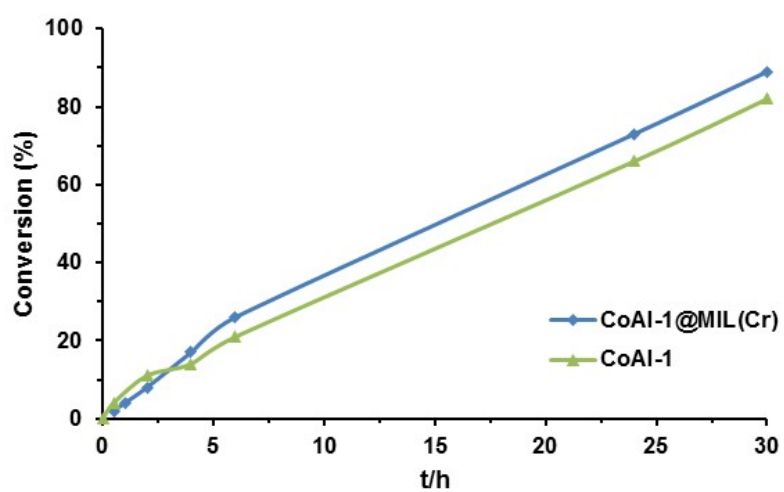
**Figure S4.** SEM image of the CoAl-1@MIL(Cr) (left) and CoAl-2@MIL(Cr) (right) composite materials.



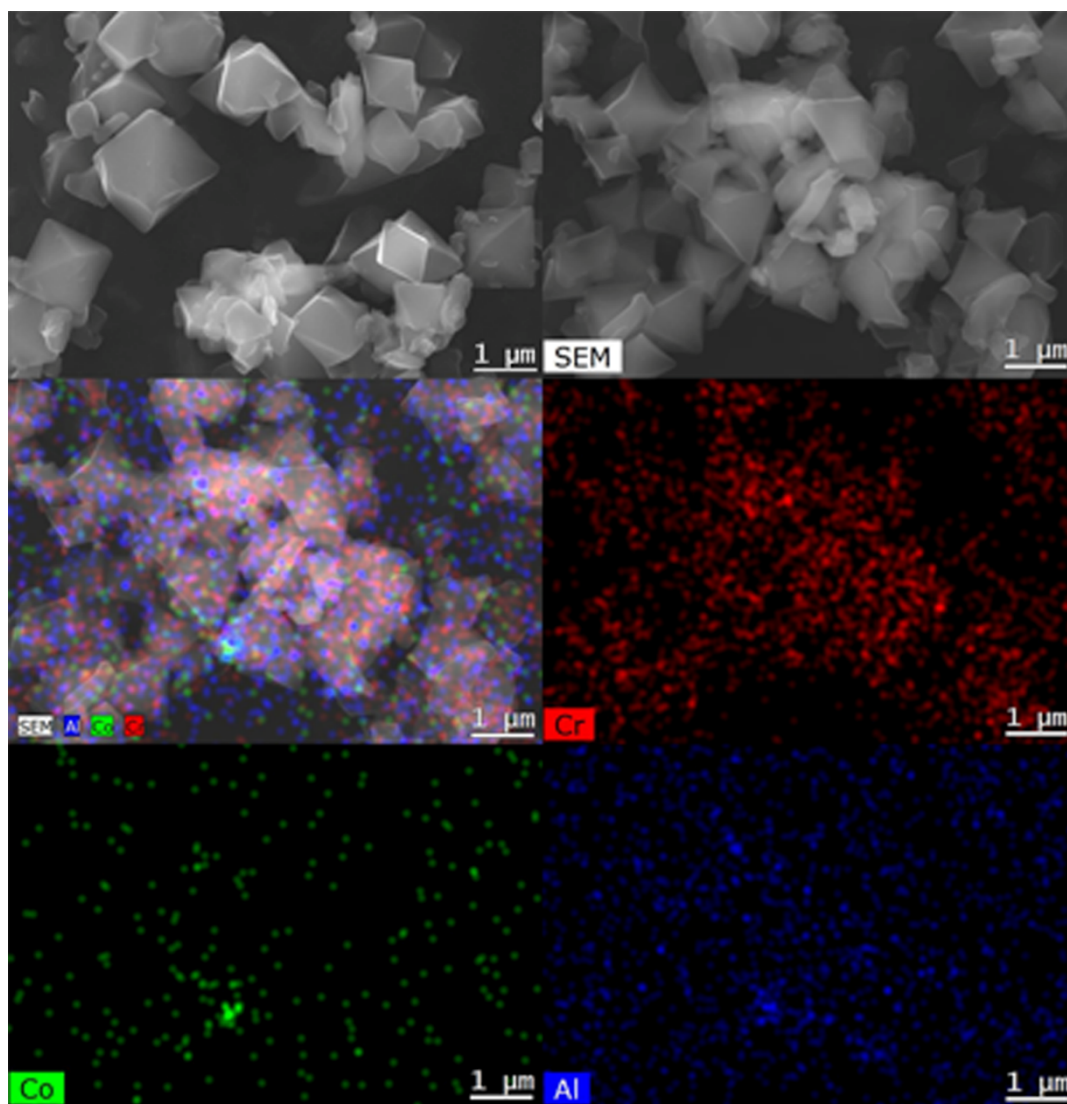
**Figure S5.** EDX spectra of the CoAl-1@MIL(Cr) composite (a) before and (b) after catalysis.



**Figure S6.** Kinetic profiles for the oxidation of thioanisole using the isolated nanoparticles and the corresponding composite materials.



**Figure S7.** Kinetic profiles for the oxidation of styrene using the isolated CoAl-1 nanoparticles and the corresponding CoAl-1@MIL(Cr) composite material.



**Figure S8.** SEM image and elemental mapping images for CoAl-1@MIL(Cr)-ac (ac stands for after catalysis).