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Process and mechanism of toluene oxidation using $Cu_{1-y}Mn_2Ce_yO_x$/sepiolite prepared by the co-precipitation method

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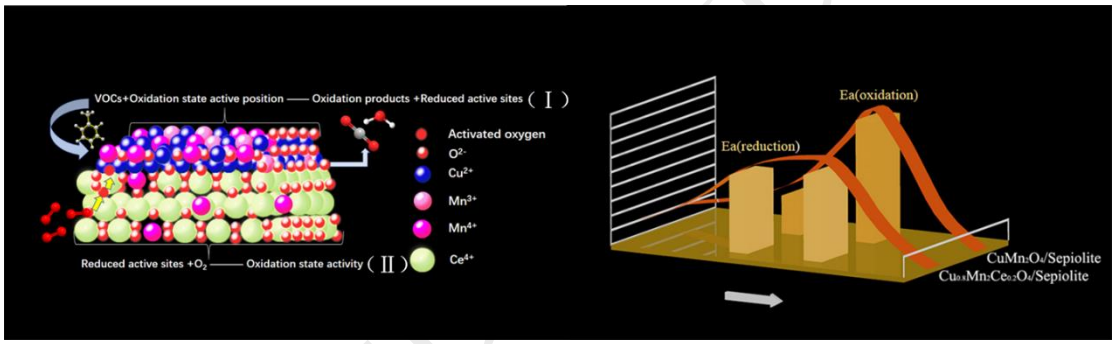
Graphical Abstract



Highlights

- $Cu_{1-y}Mn_2Ce_yO_x$/sepiolite catalysts showed high activity for toluene oxidation.
- Mn species valence distribution and defects of catalysts were studied.
- The catalytic kinetics were calculated by MVK model.
- Two steps of the MVK model were studied in depth.

Abstract

To achieve efficient degradation of toluene, a series of $Cu_{1-y}Mn_2Ce_yO_x$/sepiolite catalysts (y=0.1, 0.2, and 0.3) with different $Cu_{1-y}Mn_2Ce_yO_x$ loadings (10%, 20%, and 30%) were prepared via the co-precipitation method. The structure-activity and surficial elemental species of $Cu_{1-y}Mn_2Ce_yO_x$/sepiolite were characterized by XRD, TEM, SEM, BET, ICP-MS and XPS. The

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