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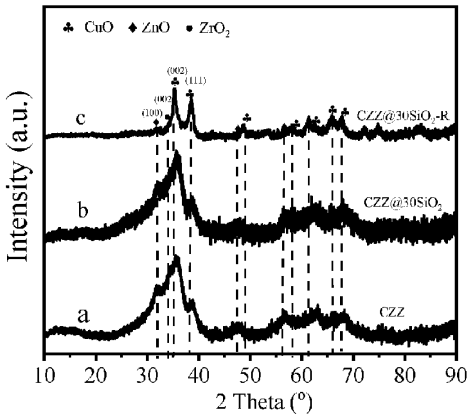


FIG. 3

(57) Abstract: The present disclosure relates to a method of preparing a copper-based catalyst. The method comprises mixing a colloidal solution containing a hydroxycarbonate precursor comprising copper (Cu), zinc (Zn) and zirconium (Zr) cations, with a tetraethyl orthosilicate (TEOS) and ethanol mixed solution to obtain a solution; adjusting pH of the solution; isolating a solid phase from the solution; drying the solid phase; and calcining the solid phase to obtain a silicon dioxide (SiO2)encapsulated copper-based catalyst consisting of Cu-Zn-Zr ternary metal oxide nanoparticles encapsulated in silicon dioxide (SiO2), represented by Cu-Zn-ZrOx@SiO2.

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