

TANDEM CH₄ REFORMING OVER NI/LACEZROX CATALYST VIA SYNCHROTRON IN SITU CHARACTERIZATION

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The tandem reforming is a good method for suppressing the reverse water gas shift (rWGS) side reaction in dry reforming (CH₄ and CO₂). In this study, the Ni/LaCeZrO_x is used to systematical test by the tandem. The first is for CH₄ decomposition until the catalyst no more activity, and then the H₂O or CO₂ treatment for decoking, final to verify the regeneration performance. In this test, both have better stability than the original reaction (CH₄ decomposition). Furthermore, by CO₂ tandem test, the stability can extend to 10 times at least of reaction time. The in situ characterization of XAS and XRD use to explore the structure change during the tandem reforming.

Keywords: tandem; dry reforming; reverse water gas shift; Ni/LaCeZrO_x catalyst