

Submicron Size of Alumina/Titania Tubes for CO₂-CH₄ Conversion

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Abstract : This research provides a systematic way to study and better understand double nano-tubular structure of alumina (Al₂O₃) and titania (TiO₂). The TiO₂ NT was prepared by immersing Al₂O₃ template in 0.02 M titanium fluoride (TiF₄) solution (pH=3) at 25 °C for 120 min, followed by annealing at 450 °C for 1 h to obtain anatase TiO₂ NT in the Al₂O₃ template. Large-scale development of film for nanotube-based CO₂ capture and conversion can potentially result in more efficient energy harvesting. In addition, the production process will be relatively environmentally friendly. The knowledge generated by this research will significantly advance research in the area of Al₂O₃, TiO₂, CaO, and Ca₂O₃ nano-structure film fabrication and applications for CO₂ capture and conversion. This green energy source will potentially reduce reliance on carbon-based energy resources and increase interest in science and engineering careers.

Keywords : alumina, titania, nano-tubular, film, CO₂

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