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論 文 要 約

THESIS OUTLINE

系・コース： Department of, Graduate major in	応用化学系 原子核工学	系 コース	申請学位（専攻分野）： Academic Degree Requested	博士 Doctor of	（　工学　）
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論文題目 Thesis Title	Material Development of Calcium Oxide-Based Media for Thermochemical Energy Storage

要約

$CaO/Ca(OH)_2$ thermochemical energy storage system (TCES) is a promising technology to alleviate the energy-crisis issues economically and environmental-friendly. However, TCES system has not been widely and commercially constructed yet because of its limitation and unsatisfying performance in long-term operations, e.g., the agglomeration problem, bulk volume change issue, low mechanical stability characteristics and low thermal conductivity shortcomings. With the modification by appropriate additives, the issues or drawbacks from raw materials can be compensated in some extent. Therefore, the objective of this study is to alleviate the above issues by material modification, that is to develop calcium oxide-based composite materials with upstanding reactivity, superior output/storage density, and adequate mechanical stability. In addition, to further understand the performances of the TCES system combined with nuclear power plants, one Nuclear-TCES combined system is proposed and evaluated environmentally and economically.