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Investigating the Reaction Kin tics of Coal Gasification for the Efficient Generation of Pure Hydrogen, while Exploring Carbon Capture and Storage Opportunities

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Abstract

Coal gasiýcation stands as a pivotal technology in the quest for sustainable energy solutions, o ering a pathway towards e cient hydrogen production while addressing the imperative of carbon capture and storage (CCS). This abstract encapsulates the essence of investigating the reaction kinetics of coal gasiýcation for high-purity hydrogen generation and explores opportunities for CCS integration. Through meticulous analysis of reaction rates, mechanisms, and inþuencing factors, this study aims to optimize coal gasiýcation processes for enhanced hydrogen yield and purity. Concurrently, it delves into the feasibility of integrating CCS technologies to mitigate carbon emissions associated with coal gasiýcation. By elucidating the complex dynamics of these processes, this research endeavors to contribute to the advancement of clean energy technologies and the transition towards a low-carbon future.

Keywords:

Introduction

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Understanding Coal Gasi cation

E cient Hydrogen Generation

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