

**Title:** Development of a High-Efficiency Catalyst for Coal-to-Methanol Conversion

**Abstract:** The conversion of coal-derived syngas to methanol presents a valuable pathway for chemical feedstock production. However, existing catalysts suffer from low selectivity and rapid deactivation. This proposal aims to design and synthesize a novel copper-zinc-oxide catalyst supported on a nanostructured zeolite framework. The research will involve computational modeling to predict optimal catalyst structure, followed by experimental synthesis and performance testing under high-pressure conditions to achieve higher methanol yield and long-term stability.