

PNNL-32877

Production of CO₂-Negative Building Composites Development

CRADA 553 (PNNL 78606/79110)

May 2022

Satish K Nune

Southern California Gas Company

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Abstract

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Abstract

This project will investigate and utilize the basicity and enhanced reactivity of CO₂ chemically captured in PNNL's CO₂BOLs carbon capture solvents to perform the first direct carboxylation of the aromatic rings (substituted phenols) in lignin and lignite. This project aims to develop a deep decarbonization approach that can sequester millions of tonnes of CO₂ annually by reacting with two large-volume products, lignin, and lignite, to enable their use as composite fillers. The goal is to demonstrate that CO₂-containing composites have comparable properties to conventional synthetic materials, meeting international building codes (IBC) while being able to sequester millions of tonnes of CO₂ per year.

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