

PNNL-32877

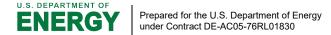
Production of CO2-Negative Building Composites Development

CRADA 553 (PNNL 78606/79110)

May 2022

Satish K Nune

Southern California Gas Company



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Abstract

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Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830

Pacific Northwest National Laboratory Richland, Washington 99354

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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