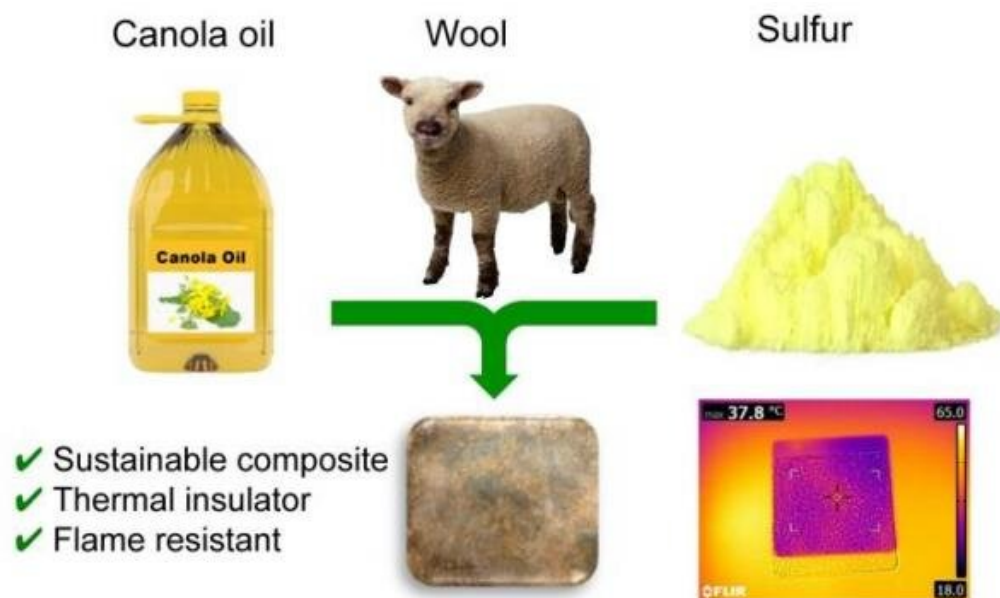


# New insulation takes heat off environment

March 12 2021



ChemSusChem diagram in the new paper. Credit: Flinders University

Waste cooking oil, sulfur and wool offcuts have been put to good use by green chemists at Flinders University to produce a sustainable new kind of housing insulation material.

The latest environmentally friendly building product from experts at the Flinders Chalker Lab and colleagues at Deakin and Liverpool University, has been described in a new paper published in Chemistry Europe ahead of Global Recycling Day (18 March 2021).

The insulating composite was made from the sustainable building blocks of wool fibres, sulfur, and canola oil to produce a promising new model for next-generation [insulation](#)—not only capitalizing on wool's natural low flammability but also to make significant energy savings for property owners and tenants.

The new composite is one of several exciting new composites and polysulfide polymers made from waste products that are now being commercialized, says lead author Associate Professor Justin Chalker, the New Innovators winner in the 2020 Prime Minister's Prizes for Science.

"The aim of this new study was to evaluate a composite made from sulfur, canola oil, and wool as thermal insulation. The material is prepared by hot pressing raw wool with a polymer made from sulfur and canola oil," Associate Professor Chalker says.

"The promising mechanical and insulation properties of this composite bodes well for further exploration in energy saving insulation in our built environment."

The new study adds to a suite of other composites, such as a new type of building block and a renewable rubber material created in the Chalker Lab.

The long-term biodegradation of these materials in a safe and responsible way at the end of their life is also a target of the research.

The last decade has been described as the hottest on record, and reusing waste is one way to extend the life of billions of tons of natural resources consumed every year.

Global company Clean Earth Technologies is commercializing the polymers for a range of applications—from removing mercury

contamination from soil and retrieving oil after a large-scale spill, to a polymer to release fertilizer more slowly to reduce run-off, and facilitating a safer method of leaching and extracting gold.

In line with the UN's Sustainable Development Goals 2030, Global Recycling Day recognizes individuals, governments and organizations taking direct action to support the global green agenda.

Recycling is a key part of the circular economy, helping to protect our natural resources. Each year the 'Seventh Resource' (recyclables) saves over 700 million tons in CO<sub>2</sub> emissions and this is projected to increase to 1 billion tons by 2030.

**More information:** Israa Bu Najmah et al, Insulating Composites Made from Sulfur, Canola Oil, and Wool\*\*, *ChemSusChem* (2021).

[DOI: 10.1002/cssc.202100187](https://doi.org/10.1002/cssc.202100187)

Provided by Flinders University

Citation: New insulation takes heat off environment (2021, March 12) retrieved 26 April 2024 from <https://phys.org/news/2021-03-insulation-environment.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.