Mechanochemical treatment of rice husk ash for cement applications.

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The high levels of current global CO_2 emissions require going beyond carbon-neutral to being carbon-negative in cement products. However, these carbon-sequestering technologies for cement are still lagging. Common cement replacements, such as slag and fly ash, are also dwindling in the United States. Using agricultural byproducts is a promising alternative, but these can have fresh and hardened state performance challenges. This poster demonstrates that the application of new CO_2-sequestering technologies applied to rice husk ash (RHA) can improve its performance as a partial replacement for cement. Here we show that strength is enhanced through pretreatment methods. Current results show a 76% increase in compressive strength at seven days and an 82% increase at 28 days. This work is crucial for the validation and improvement of new supplementary cementitious materials (SCMs). It is a key step in allowing for a wider variety of SCMs to be used in the construction industry and to meet the United Nations 2050 Net Zero climate goals.