



PRODUCING CEMENTITIOUS MATERIALS FROM INERT FILLERS WITH FINE POZZOLANIC PARTICLE COATINGS

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The Invention

UW-Madison researchers have developed a new method to produce cementitious materials from low-cost limestone fillers without pyro-processing. The method involves coating limestone particles with fine pozzolanic particles such as colloidal silica, producing composite particles with inert cores and reactive surfaces. The coating is achieved through a simple wet coating method, where limestone and colloidal silica particles are added into a calcium salt solution where the calcium concentration and pH are adjusted to create opposite surface charges on the two types of particles. Coating is spontaneous and can be reliably achieved after 10-20 minutes of stirring. Different coating contents can be obtained by adjusting the amount of colloidal silica added into the solution. Coating colloidal silica onto limestone fillers overcomes the agglomeration issue since the limestone particles are used as the carrier to introduce colloidal silica into the cement mixture. After the coating step, particles are filtered out of the solution and stored for later use. When introduced into a cementitious environment, the reactive coating is converted to a binder (e.g., calcium silicate hydrate) through pozzolanic or similar reactions, cementing the filler particles together. The coated limestone particles can be used as a partial cement replacement in traditional Portland cement concrete or the main cementation agent in more advanced cement systems.

Additional Information

For More Information About the Inventors

- [Bu Wang](#)

Tech Fields

- [Clean Technology : Other clean technologies](#)
- [Materials & Chemicals : Composites](#)

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867