NRC·CNRC
Institute for Research in Construction

Bringing quality to the built environment

Cement-Based Nanocomposites

Objectives

To develop new calcium silicate hydrate (C-S-H) polymer nanocomposites as a means to tailor the formation of cement-based composites

Background

Calcium silicate hydrate, which is the major product of Portland cement hydration, has structural similarities with other layered materials which are used to make nanocomposites. Such materials can improve the thermal, mechanical, molecular barrier, flame retardant and corrosion protection properties of polymers. We therefore see considerable potential for tailoring new cement based composite materials.

Statement of Work

- Develop new calcium silicate hydrate (C-S-H) polymer nanocomposites.
- Study the engineering properties of new cement-based nanocomposites.
- Investigate potential applications of cement-based nanocomposites for the construction industry.

Expected Outcomes

This project will lead to new commercially viable methods for tailoring materials properties, which will improve concrete performance, durability and sustainability. It will also promote the use of nanocomposites beyond their traditional applications to civil engineering such as corrosion coatings and fire retardant materials.

Start/Expected Completion Dates

This project started in July 2004 and will continue for several years.

Project Manager

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For more information, see http://irc.nrc-cnrc.gc.ca/bes/cmst/nanocomposites_e.html

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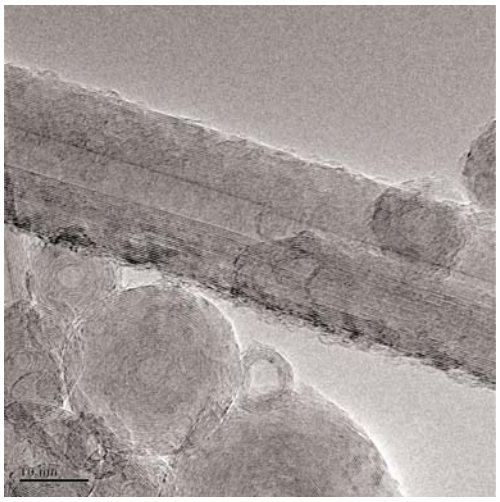

Transmission Electron Microscopy (TEM) image of a calcium silicate hydrate polymer nanocomposite