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Halloysite clay nanotube composites with sustained release of chemicals

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Abstract

© Springer Science+Business Media Dordrecht 2015. All rights reserved. Halloysite is a naturally occurring nanometer scale tube that is capable of both enhancing the physical properties of a material and functionalizing the material. The addition of halloysite into polymeric materials increases the composite physical strength because of the shape and stability of these 50-nm diameter and ca. 1,500 nm length tubes. Whereas the unique chemical and physical characteristics of halloysite allow for loading drugs, biomacromolecules, anti-corrosion agents, flame-retardant agents, and metal nanoparticles followed by their controlled release. Therefore, by loading a chemical of interest inside of the tubes and then mixing the modified halloysite with various materials one will not only be able to make stronger materials but make them smarter and provide sustained functionality that would otherwise not be possible.

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