Polymer coatings heal when scratched

A method of making polymer coatings that repair themselves has been devised by, and is being commercialised by, a team led by two professors at the University of Illinois in the US.

The technique involves encapsulating a catalyst and a healing agent in separate spheres that are less than 100 microns across, which are then dispersed within the coating material and applied to the substrate. It is the brainchild of professor of materials science and engineering Paul Braun, and professor of aerospace engineering, Scott White.

When the coating is scratched, some of the capsules break open, spilling their contents into the damaged region. The catalyst and healing agent then react, repairing the damage within minutes or hours, depending upon environmental conditions.

Reproducible damage was induced by scratching through a 100 micron thick polymer coating and into the steel substrate using a razor blade. The samples were then immersed in a salt solution and compared over time. Control samples corroded within 24 hours but self healing samples showed no visual evidence of corrosion even after 120 hours of exposure.

Author
Tom Shelley

Supporting Information

http://news.illinois.edu/news/08/1209coatings.html

Email this article

Bookmark this article using:

Del.icio.us digg reddit Facebook StumbleUpon