Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Magnetically Triggered Adhesives

Overview

A novel approach to initiate the curing of adhesives through use of a simple magnet.

Adhesive formulations modified with an internal catalyst prevents the polymerisation of the adhesive until activated or "triggered" by a magnetic field, promoting quick polymerisation. The researcher has developed magnetic nanocomposites with the catalyst which can keep formulations in an oxidised state, preventing adhesive polymerisation. The removal of catalytic magnetic nanoparticles by an external magnetic field or by a permanent magnet triggers fast polymerisation of the adhesive formulation.

Advantages

Reduced costs through low energy cure:

- Eliminate requirement for heat or UV cure
- Reduce operational health and safety risks due to avoidance of hot processing and UV light
- Increase processing throughput with speedy cure
- Control when cure occurs – reduces time constraints during bonding stages in the course of processing

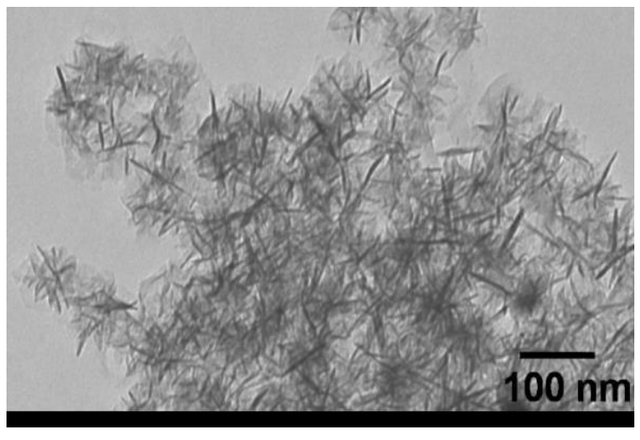
Applications

Potential range of applications include acrylic, acrylate and anaerobic adhesives

Formulations can be presented as 1K or 2K options with the nanocomposites kept separate from the adhesive where necessary

The catalyst/nanocomposites could be introduced to existing adhesive products

Possible to bond any substrate (wood, glass, ceramic, metal etc.) to a metal substrate



Patent Pending US, EU

WO/2019/008134

Market

Adhesives market

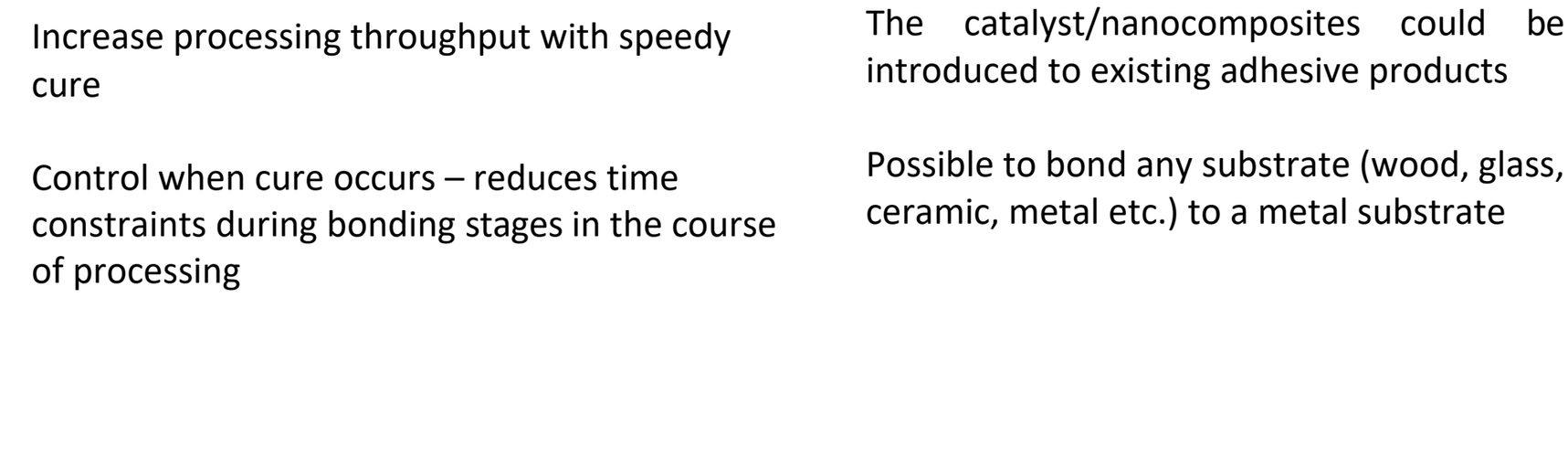
Opportunity

Research collaboration

Available to License

The opportunity

Please contact us if you are interested in engaging in a Research Collaboration or Licencing opportunity to further develop this technology for commercialisation application.



Acrylic formulation tested on SS to glass. Bond is formed only when exposed to magnet

Researcher

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