

Recycling wind turbine blades

Slide by Neil Goalby. Available from rsc.li/3p7xcLE

Wind turbine blades are made by bonding carbon fibre meshes with a thermosetting epoxy polymer to form a composite. Cross links in the polymer make the composites strong, but it also means that they can't be melted. This makes them unrecyclable and they often end up in landfills.

Researchers have added pieces of epoxy composite into a mixture of solvents, along with a ruthenium catalyst and heated the mixture to 160°C for three days. This method breaks a specific C–O bond in the resin, which splits up the polymer into its original building blocks so that it can be reused.



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Decommissioning our wind turbines will require a lot of recycling

Questions

1. Describe why material making wind turbine blades is called a composite material.
2. Describe the structure of a thermosetting polymer.
3. Explain why thermosetting polymers are difficult to recycle.