

SusPoCo

Addressing the critical and growing need for more sustainable high performance polymer composites designed with repair, recycling and reuse in mind.



Inspiration

Composites that combine stiff, strong fibres with a polymer "glue" that binds them together, are among the highest performing materials. They provide incredible levels of stiffness and strength with very low weight, and can be seen in a wide range of everyday applications: from wind turbine blades to carbon fibre bicycles.

The replacement of heavier metal structures with composites in cars, boats, trains and aircraft promises to provide substantial reductions in weight, increases in fuel efficiency, and reductions in greenhouse gas emissions. Moreover, the use of composites in infrastructure applications such as bridges and overpasses provides options to create much more robust, longer-lasting structures that will not corrode on exposure to the environment.

Making composites is however slow and labour intensive, with most of them based on non-renewable resources. Recycling, if practiced at all, is quite crude and tends to significantly degrade the composite constituents, making it impossible to reuse them in the same applications.

Innovation

Together with the University of Luxembourg, LIST researchers have the ambition to tackle these challenges by developing a new generation of sustainable polymer composites based on recyclable resins and renewable and / or recycled fibres. The materials envisioned throughout this project will not only be recyclable, but also reprocessable and repairable, while retaining the attractive characteristics of existing high-performance composites.

Impact

The SusPoCo project will generate the knowledge needed to make the best use of such materials and achieve a far more sustainable composite lifecycle. Utilisation of the technologies developed will therefore lead to reductions in greenhouse gas emissions and an important contribution to the goal of net-zero by 2050.

Partners

University of Luxembourg (LU)

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Contact

5, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
phone: +352 275 888 - 1 | LIST.lu

Daniel SCHMIDT (daniel.schmidt@list.lu)
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