

# Press release

October 27, 2021

## Chemical modification and multi-function applications of nanocellulose

On October 27, 2021, Ge Zhu defended a doctoral thesis from the Université Grenoble Alpes prepared under the supervision of the Professor Alain Dufresne (Grenoble INP-Pagora / LGP2). He presented the results of his research entitled *Chemical modification and multi-function applications of nanocellulose*.

The aim of this project was to investigate some functional application of nanocellulose.

To improve the interfacial compatibility between nanocellulose and a hydrophobic matrix, active thiol groups were introduced at the reducing end of cellulose nanofibrils. Covalent cross-links were formed between thiol groups and double bonds of natural rubber via photochemically initiated thiol-ene reactions.

To obtain highly conductive composites with low percolation threshold and adequate mechanical properties, cellulose nanocrystal/graphene oxide/natural rubber nanocomposites hosting a 3D hierarchical multiscale conductive network were developed. An aerogel was prepared by integrating oxidized cellulose nanofibrils, cationic cellulose nanocrystals, sodium alginate and carbon nanotubes.

Good EMI shielding, low density, high conductivity and good mechanical strength were achieved.

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**Logo**

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