

Plant-derived composite developed by MIT researchers

New material could pave the way for sustainable plastics

Researchers at the Massachusetts Institute of Technology (MIT) have developed a potential 3D-printing material and conventional casting within dentistry. They have engineered a composite made mostly from cellulose nanocrystals, which are chains of organic polymers arranged in crystal patterns mixed with a bit of synthetic polymer. The researchers found the cellulose-based composite is stronger and tougher than some types of bone, and harder than typical aluminium alloys.

The team hit on a recipe for the CNC-based composite that they could fabricate using both 3D printing and conventional casting. They printed and cast the composite into penny-sized pieces of film that they used to test the material's strength and hardness. They also machined the composite into the shape of a tooth to show that the material might one day be used to make cellulose-based dental implants — and for that matter, any plastic products — that are stronger, tougher, and more sustainable. “By creating composites with CNCs at high loading, we can give polymer-based materials mechanical properties they never had before,” says A. John Hart, professor of mechanical engineering. “If we can replace some petroleum-based plastic with naturally-derived cellulose, that’s arguably better for the planet as well.”



Researchers at Massachusetts Institute of Technology have developed a new composite material that could one day be used to make implants.

The study, titled “Printable, castable, nanocrystalline cellulose-epoxy composites exhibiting hierarchical nacre-like toughening”, was published online on 10 February 2022 in *Cellulose*.

Source: MIT

OR Foundation meets in Rome

Inauguration of new board of trustees and new executive director

On 29 November 2021 the Oral Reconstruction (OR) Foundation has announced that Prof. Mariano Sanz from Spain, Dr Luca Cordaro

from Italy and Prof. Irena Sailer from Switzerland were elected to its board of trustees during the board meeting in Rome. Prof. Sanz was also officially inaugurated as president of the foundation.



From left: Dr Martin Schuler, who has held various management positions at Straumann in the past; Prof. Irena Sailer, head of the Division of Fixed Prosthodontics and Biomaterials at the University of Geneva in Switzerland; Prof. Mariano Sanz who has published more than 350 scientific articles and book chapters about periodontics, implant dentistry and dental education; and Dr Luca Cordaro who is head of the Department of Periodontology and Prosthodontics at the Eastman Dental Hospital in Rome in Italy. (Image: © Oral Reconstruction Foundation)

In addition, Dr Martin Schuler, who has a strong background in the field of medical devices and dental implants, was appointed executive director of the foundation, taking over responsibilities from Dr Alex Schär, who is retiring after 16 years as board member and five years as the foundation's CEO. Dr Schuler assumed full responsibility for the foundation on 1 January 2022. Dr Schär will support the transition of projects until the end of March 2022.

During his presidency, Prof. Sanz intends to focus on supporting young and upcoming scholars and on fostering clinical research and efficient treatment approaches for the benefit of the patient. Many educational events are scheduled for 2022, including symposia in France, Germany, Japan, Spain and the US, and the foundation will offer an excellent platform for the exchange of expertise between universities and dental practitioners worldwide throughout the year.

More information about the foundation can be found online at orfoundation.org.

Source: Dental Tribune International

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