Award 2007 : BMBF-Ideenwettbewerb „Bionik - Innovationen aus der Natur“

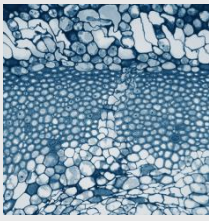
NOT A PROVILEGE OF NATURE

SELF-REPAIR

For plants and animals, wound healing is a matter of course. A transfer into technical materials on a lab bench scale has been achieved, modelling the wound sealing of plants. A first technical application is a self-repairing membrane for pneumatic structures.

Plants have developed the ability to seal and heal wounds in the course of evolution. Fissures caused by injuries or growth processes in plant tissues are quickly sealed again and subsequently repaired. Based on biological analyses of lianas, the principle of rapid wound sealing of plants was successfully transferred into technical materials. The development of a bionic coating, which repairs fissures and holes of pneumatic structures fast and efficiently, has been successful on a lab bench scale.

Self-repairing foams prevent or reduce the amount of air discharged with the damaging of membranes used in the Tensairity® technology. With punctures caused by nails with a diameter of 5 mm, the period time of the pressure drop was reduced by two to three orders of magnitude compared to membranes without such a layer and thus an excellent self-repair effect was achieved. Development on a larger scale is realized in cooperation with Rampf Giessharze GmbH & Co. KG. Grafenberg.



R & D - Partners

Prof. Dr. Thomas Speck

Albert-Ludwigs-University of Freiburg

Dr. Rolf Luchsinger

Center for Synergetic Structures
EMPA Dübendorf, Schweiz

Prof. Dr. Rolf Mülhaupt

Freiburg Materials Research Center FMF

Project coordination & Contact

Dr. Olga Speck

Competence Network Biomimeitcs
Plant Biomechanics Group Freiburg
Schänzlestr. 1
D-79104 Freiburg

T: +49 (0)761 203 2803
F: +49 (0)761 203 2804
E: mail@kompetenznetz-biomimetik.de

More Informationen on the Internet

www.kompetenznetz-biomimetik.de
www.kompetenznetze.de
www.fmf.uni-freiburg.de
www.empa.ch