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FRAUNHOFER INSTITUTE FOR MANUFACTURING TECHNOLOGY AND ADVANCED MATERIALS IFAM


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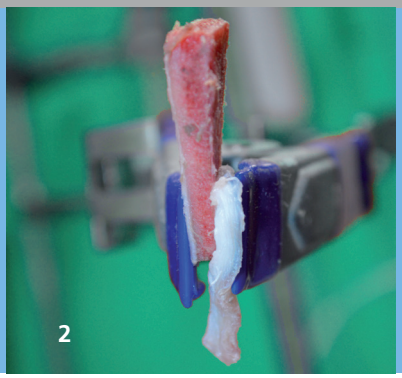
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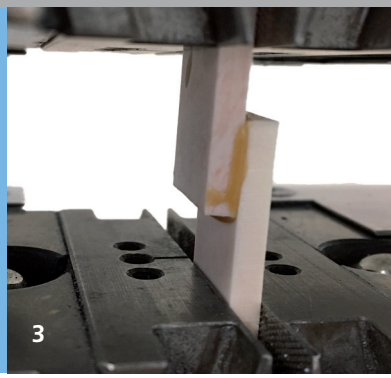
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1 *Demonstrator: Medical adhesives.*
2 *Joining of porcine femur bone and tendon.*
3 *Testing the tensile shear strength of bonded cortical bovine bone.*

MEDICAL ADHESIVES

Bonding technology advantages

Adhesives are not only increasingly used in the design of medical devices, but also directly on and in humans inter alia: as a substitute for sutures or surgical stapling of skin. Less tissue damage and no implant removal, increased biocompatibility, and the ability to stop bleeding or seal tissue damage are clear benefits of using medical adhesives.

Model: »The nature«

In addition to fully synthetic and semi-synthetic adhesives, more and more formulations are on the way from research to clinical trials and applications. The concepts from nature are based on a combination of biomimetic and chemical approaches or are entirely of biological origin. In natural adhesives, proteins play an essential role in mediating adhesion and cohesion at the same time. Also of relevance is the structural class of sugars, whose chemistry offers a wide spectrum for individual modifications of medical adhesives.

Central research areas at Fraunhofer IFAM include:

- Investigation of the basic interactions of biomolecules with each other and with different surfaces.
- Formulation of medical adhesives reflecting the mode of action.
- Studies on the aging of medical adhesives.
- Biocompatibility tests.
- Development of standardized test methods for the testing of bonded tissue, bone or tendon.

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