

Lasermesssystem zur Eisschichtdickemessung

✓ Bachelor- / Studien- / Masterarbeit



In einem im Umbau befindlichen Rotorturm werden atmosphärische Vereisungsbedingungen nachgestellt, um neue vielversprechende Eiserkennungs- und Eisschutzsysteme für Hubschrauber zu erproben. Für die Erfassung der momentanen Eisschichtdicke im Rotorblattnasenbereich während des Vereisungsprozesses soll das Rotorblatt eine Lichtschranke passieren, deren Unterbrechungsdauer Aufschluss über die Länge in Richtung Profiltiefe und damit die Eisschichtdicke Aufschluss gibt.

Aufgaben:

- Konzeptionierung des optischen Verfahrens
- Auswahl eines Lasermesssystems und Programmierung
- Erprobung des Messsystems

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Experimental investigation of shear adhesion between 3D Printed materials

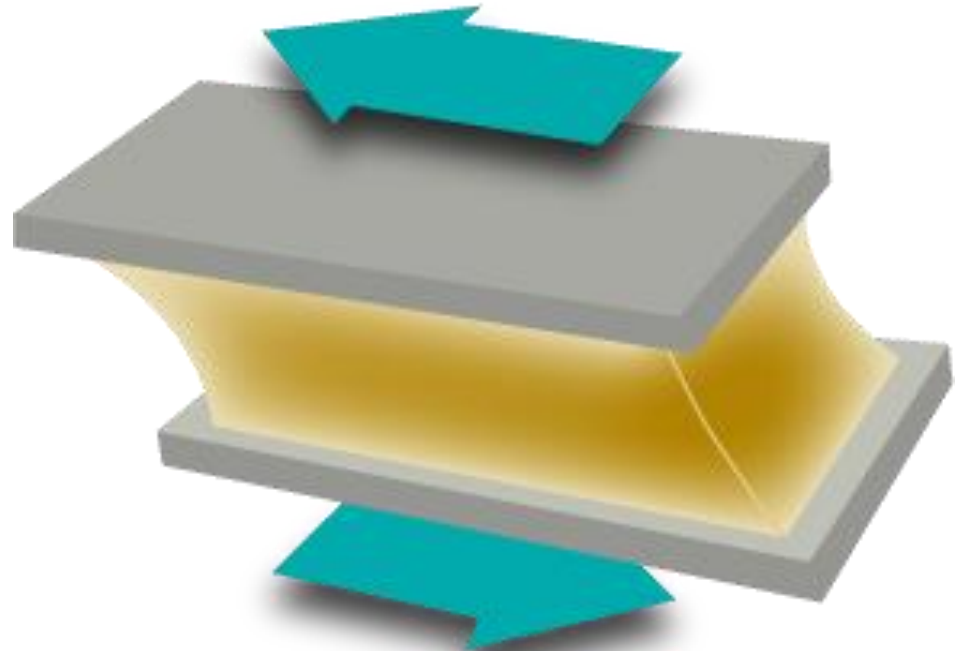
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3D printing is continuously growing field, where capabilities of the machines as well as amount of printable materials constantly increase. Adhering characteristics between materials have to be investigated experimentally to understand the possibilities of material combination for 4D structures, that are able to change their shape over time under environmental influence.

This work offers knowledge in 3D printing, material testing, characterization and measured data evaluation.

Tasks:

- Preparation of printable specimen geometry according testing standards
- 3D Printing and testing of specimens
- Evaluation of results, preparation of stress-strain diagrams and material characterization



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Experimental investigation of tensile adhesion between 3D Printed materials

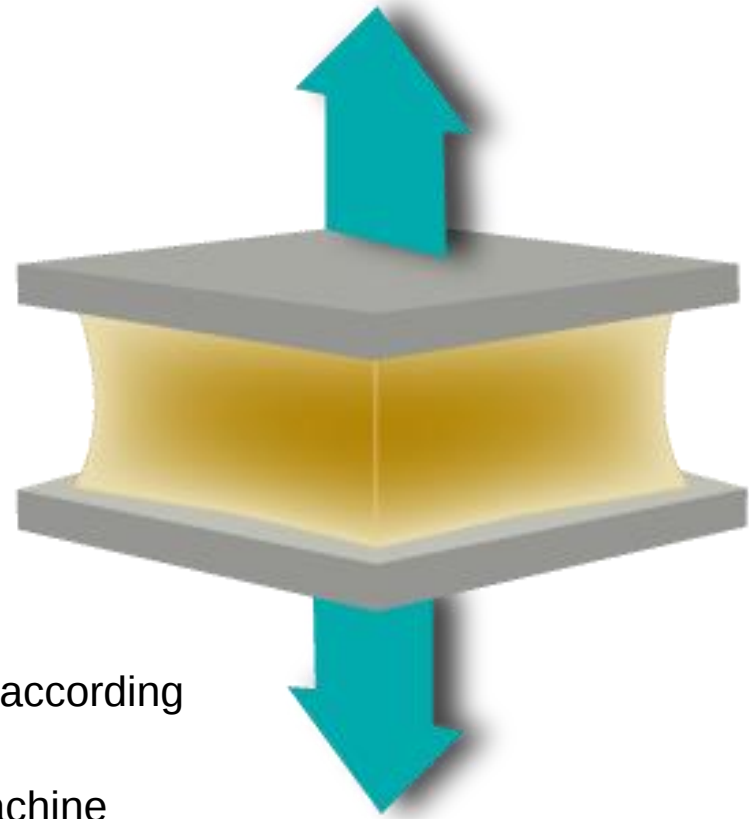
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3D printing is continuously growing field, where capabilities of the machines as well as amount of printable materials constantly increase. Adhering characteristics between materials have to be investigated experimentally to understand the possibilities of material combination for high performance multi-material structures.

This work offers knowledge in 3D printing, material testing, characterization and measured data evaluation.

Tasks:

- Preparation of printable specimen geometry according testing standards
- Investigation of usage of centrifugal testing machine
- 3D Printing and testing of specimens
- Evaluation of results, preparation of stress-strain diagrams and material characterization



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Investigation and development of testing stand for thin piezoelectric composites

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Thin, piezoelectric composites consisting of piezo-ceramic particles dispersed in an epoxy matrix are the alternative to bulk piezo-ceramics with superior sensing capabilities.

Piezoelectric composites must be tested and characterized in their thin configuration. This task requires new testing method to be developed.

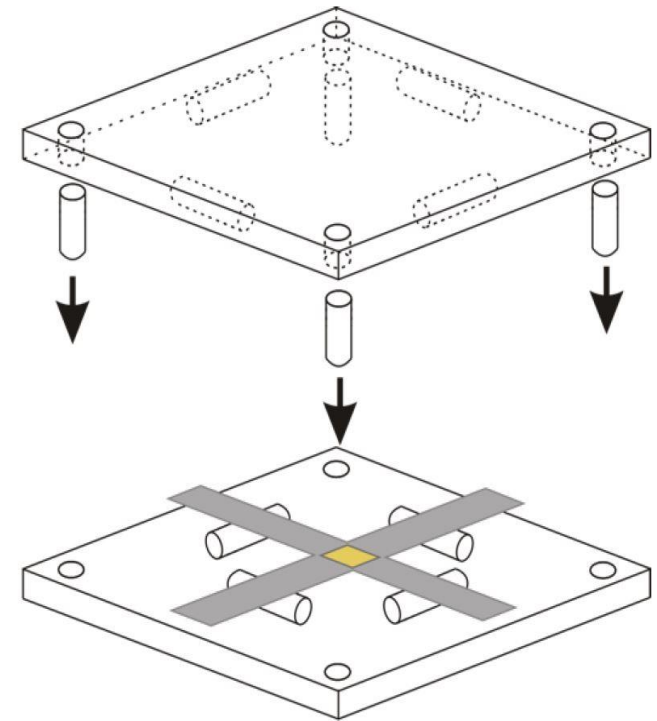
As a first approach, piezoelectric composite fixed on thin aluminum beam with additional sensors is considered.

Tasks:

- Investigation and comparison of current testing methods for thin piezoelectric composites
- Design and construction of testing stand
- Development of testing procedure

Additional information:

- Part of experimental work might take place at DLR Braunschweig
- Multiple thesis can be done on this topic (Studienarbeit + Masterarbeit)



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Measuring piezoelectric properties of thin piezo-composites with Laser Doppler Vibrometer

✓ Bachelor- / Studien- / Masterarbeit

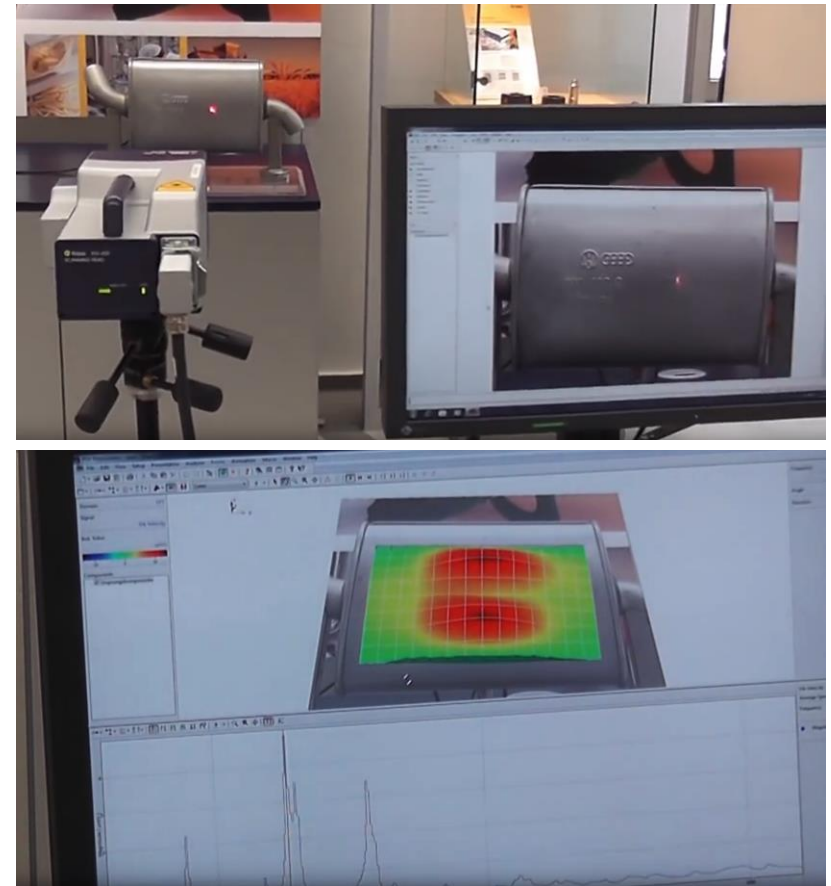
Piezoelectric composites, made of piezo-ceramic particles dispersed in an epoxy matrix, must be tested and characterized in their thin configuration. The possibilities to use Laser Doppler Vibrometer have to be evaluated experimentally.

Tasks:

- Investigation of Laser Doppler Vibrometer capabilities
- Investigation of various ceramic geometries, different measuring conditions and parameters
- Development of MatLab script to analyze the results of measurements
- Development of test method

Additional information:

- Part of experimental work might take place at DLR Braunschweig
- Multiple thesis can be done on this topic (Studienarbeit + Masterarbeit)



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drivers, and one driver
provides wrong colors (red
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If your computer does not
have it, you can install it by
double clicking it here: <\\laf-filer\data\Drucker> -> Ricoh
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