

**BACHELORTHESIS**

**Influence of the relative air humidity on the tribological behaviour of copper**

**Background**

Around 23% of the world's energy requirements are currently attributable to friction and wear in mechanical applications such as cars, wind turbines, etc. By optimizing the tribological systems used, these losses can be reduced by up to 40% in the long term and thus make a significant contribution to the sustainable use of resources and savings in emissions. [1]

To achieve this, a better understanding of the underlying tribological mechanisms is necessary. An important aspect here is the influence of the environment, for example humidity, which can strongly affect friction behavior and wear. In order to understand the processes involved, high-purity copper is investigated as a model material.

**Tasks**

In this experimental work, the influence of relative a humidity on the tribological behavior of copper will be systematically investigated. For this purpose, the resulting microstructure will be characterized after the experiments on the scanning electron microscope and analyzed together with the measured friction data.

**Requirements**

- Studies in mechanical engineering, materials science or similar
- Good knowledge of materials science
- Previous knowledge in the field of tribology is not mandatory
- conscientious and independent way of working as well as interest in experimental work are key

**Possible start: immediately**

**Contact**

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wind power and renewable energies



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medical technology



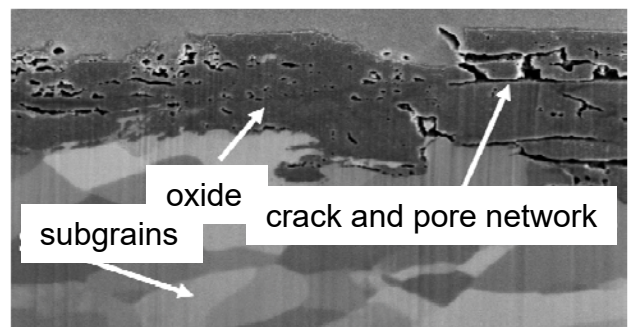
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bearings, automobiles



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Examples for tribological systems in daily life.



Mikrostruktur in copper after tribological loading.

[1] Holmberg, K., Erdemir, A. Influence of tribology on global energy consumption, costs and emissions. *Friction* **5**, 263–284 (2017).