

Topic: Development of PVD high performance coatings to increase the lifespan of tools and components

PVD-Technology (Tools)

[Angstrom Sciences]

### Topic:

**PVD hard coatings** are frequently used to increase the the lifespan of tools and components. These tools and components are subjected to various **cyclic mechanical loads** during their service life. Since 18th century, fatigue has been known as a damage mechanism in metallic materials. However, the **current application of PVD hard coatings on metallic tools and components** requires the investigation of the **compound material consisting of ceramic coating on metallic substrate**. Any such investigation will address the high demand for the wear reduction and lifespan improvement of the tools and components in **automotive applications**.



[Aurora Scientific Corp.]

Tools and components with PVD hard coatings



[auto-motor-und-sport.de]

### Interested...

If you are intrigued by the topic and would like to gain some practical experience in PVD coating development and material analysis techniques, then **contact** per E-mail or phone!

### Research Goals:

Within the scope of this work, you will independently run the PVD coating process on an industrial coating machine followed by the material characterization of **different PVD hard coatings**. In order to investigate the **fatigue behavior of the coatings**, you will perform various experiments involving **cyclic loads**. Furthermore, you will gain hands-on experience in **laser scanning and electron microscopy (CLSM & SEM)** techniques to analyze the **deformation mechanism** of the coatings. Finally, you will compare the **fatigue behavior** of the coatings with each other as well as with the uncoated substrate material.

If you are interested, we can make an appointment to discuss further details. Kindly, contact me by E-mail or phone.

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