

Project name: **Residual Stress Analysis on a Hard TiAlN-PVD Coating System**

Beamtime Report

19.02.2014 – 19.02.2014 and 28.01.2014 – 02.02.2014

(Date of the report: 03.04.2014)

General information

Name of the rapporteur	Name of the rapporteur's organisation
Priidu Peetsalu	As Norma
Type of research (nanotechnology/health care/chemistry etc.)	Name of the research facility
Material Science and Engineering	Helmholtz-Zentrum Berlin, Synchrotron Radiation Facility BESSY II, (1) EDDI - Energy Dispersive Diffraction Station and (2) ETA - Angle Dispersive Diffractometer with Copper-K α Radiation
Date of the measurement, duration	Location of the event
(1) 19.02.2014, 7 hours (2) 28.01.2014, 4 days and 4 hours	Berlin
Facility personnel participating in the measurement	
<i>Dr. Manuela Klaus and Dr. Daniel Apel</i>	

Description of the project

Research description (short summary as written in the application)
PVD coating structure and stresses analysis. Coating is multilayer with thickness 1.88 μm used to increase wear resistance. Interest was to understand stresses inside the coating (also between the layers) and substrate material which is close to the coating. Also coating crystal structure and chemical composition
Summary of activities (experiments performed, beamtime used, preliminary overview of results, next steps and other relevant information)
Summary of activities are presented in the Science Link Project report: Residual Stress Analysis on Martensitic Steel Coated with Ti(Al)N by Physical Vapour Deposition We sent sample with our interest and description to investigation and got the results with report. Report is rather difficult to understand because most important task is for the company is to understand how the stresses are distributed inside the coating and substrate material actually. It means that discussion part should have simple explanation of the results with graphics structure photos. That allows to understand and use the results (also your possibilities) in much bigger group of engineers. Results are important to company to understand the coating behaviour during exploitation and effect to the punch cracking. Based on that we could develop/or test

coatings with different stress distribution or stresses.

How would you describe cooperation and assistance from industrial liaison officers and national contact points while preparing and carrying out the research at large scale facilities?

We were not so active in this project and therefore there were not discussion about the test and results.

Other personal remarks

This survey is already third that has similar questions about the project. It should be one survey.

Annexes

Annexes

(list of annexes; meeting minutes, graphical illustrations, tables and other supplementary data)