



TATA STEEL

Characterization of nanosized precipitates in non-oriented electrical steel laminations using Neutron small-angle scattering

Surahammars Bruk, a Tata Steel Enterprise, offers a comprehensive range of electrical steel grades and services for manufacturers and designers of high efficiency electrical motors. For the application of these steels, it is very

important to have low power losses during magnetization, and high permeability.



Magnetic properties of these materials, among other factors, are highly influenced by the precipitates directly affecting the magnetic losses by interaction with domain wall movements. With enormous increasing demand

for electrical steels especially also for the electromobility, Surahammars Bruk has been working continuously to develop magnetic and mechanical properties of electrical steels.



The [applied material analytics](#) of ANAXAM using [Neutron Small-Angle Scattering](#) helps Surahammars Bruk to investigate nanosized precipitate at high statistics. This material analytic is a part of an ongoing core project

within Surahammars Bruks, the focus of which is to improve magnetic and mechanical properties of non-oriented electrical steels by a closer control of the grain growth and a reduction of precipitates.

For this customer project, ANAXAM used the SANS-1 beamline at the Paul Scherrer Institute.

“ The requirements from the automotive industry push the limits for electrical steel properties. A continued development of these steels grades is needed to meet future demands and for this we need a better understanding of all aspects our products. The Neutron small-angle scattering technique opens new possibilities for an in-depth characterization and knowledge of important aspects of the microstructure of the material.”

Karin Haglund, Technical Manager,
– Surahammars Bruk

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