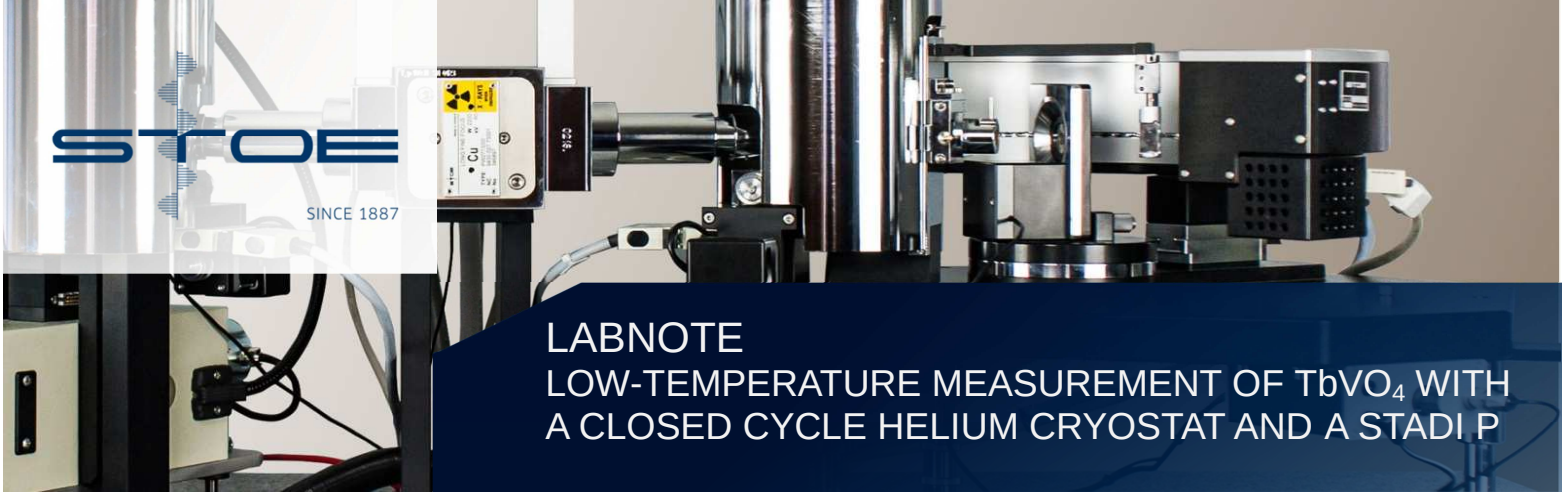
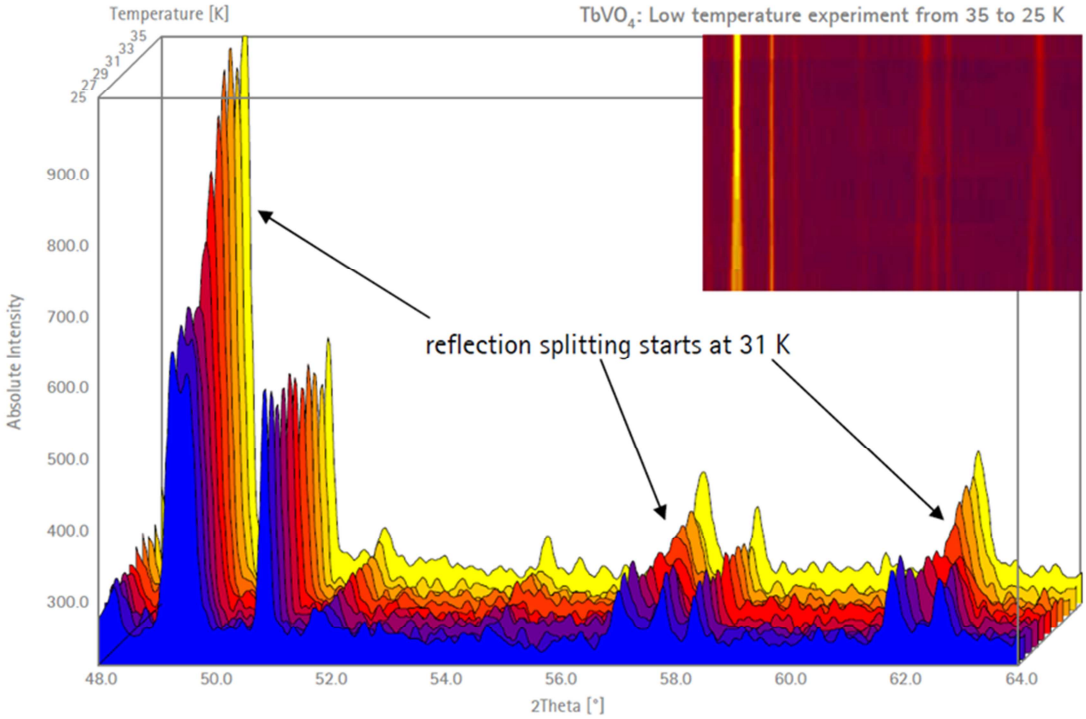


LABNOTE
LOW-TEMPERATURE MEASUREMENT OF $TbVO_4$ WITH A CLOSED CYCLE HELIUM CRYOSTAT AND A STADI P

Phase transitions at low-temperatures are of high interest for understanding material-property relationships. For example, superconductors have to be analyzed below their critical temperature.
The closed cycle helium cryostat manufactured by Advanced Research Systems has been adapted to a STOE Stadi P. It allows analyzing samples down to 5.5 K in reflection mode with X-ray diffraction methods.

The structural phase transition of $TbVO_4$ at about 32 K has been known for quite some time and is used as reference in low-temperature diffraction experiments. The low-temperature phase is orthorhombic, the respective crystal structure is significantly different as clearly indicated by the splitting of different reflections in the powder pattern when cooling the tetragonal high-temperature form.

A paste-like mixture of $TbVO_4$ and silicone grease has been applied on the sample holder of the helium cryostat. The experiment has been performed after accurate evacuation of the shroud.



STOE & Cie GmbH | Hilpertstrasse 10 | 64295 Darmstadt | Germany
P +49 (0)6151 9887-0 | F +49 (0)6151 9887-88 | stoe@stoe.com | www.stoe.com