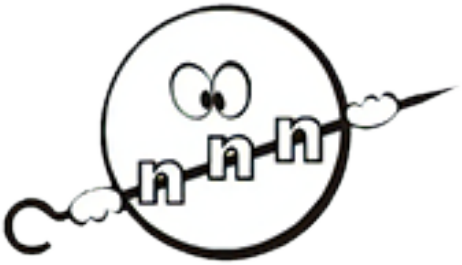

Contribution ID: **76** Type: **not specified**

Crystallographic Texture Changes during Martensitic Transformations: X-Ray and Neutron Diffraction Studies and Modeling

Thursday, 29 May 2025 14:50 (15 minutes)

Crystallographic texture (or crystallographic preferred orientation) is an inherent property of polycrystalline materials, which defines the anisotropy of their bulk physical properties. Textures are formed during inelastic deformation processes, crystallization, recrystallization, etc. They are also influenced by structural phase transformations, which may be studied in situ. Such experiments are usually performed using diffraction of high-energy synchrotron X-rays, or thermal neutrons.
For diffusionless martensitic transformations, orientation relationships between parent and product phases are often known. It is shown that in this case, bulk crystallographic textures of product phases may be easily modeled from bulk crystallographic textures of parent phases, and variant selection rules may be inferred by comparing model and experimental preferred orientations. When the orientation relationship is not defined, it might be possible to determine it using measured crystallographic textures.
Examples of transformation texture studies will be presented and discussed in detail.

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Session Classification: Parallel Session 4: Nuclear and related analytical techniques in environmental and materials science

Track Classification: Parallel session: Parallel session 4