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STRUCTURE AND GROWTH OF OMEGA-Ti NANOPARTICLES IN BETA-TI SINGLE CRYSTALS STUDIED BY ANOMALOUS X-RAY DIFFRACTION

Wednesday 9 September 2020 16:20 (30 minutes)

Nanoparticles of hexagonal 🛛 phase in bcc-Ti(Mo) single crystals (🖾 phase) occur due to a diffusionless athermal 🖾 to 🖾 transformation and they grow during follow-up ageing at elevated temperatures, while the alloying atoms (Mo in our case) are expelled from the nanoparticle volumes. We used anomalous x-ray diffraction for the study of local chemical composition of growing 🖾 particles and we found that a Mo-rich shell at the particle/matrix interface is created during the particle growth. Moreover, the expelled Mo atoms create a cloud with higher Mo density around each particle and its Mo concentration profile was studied by anomalous x-ray diffraction and small-angle scattering.

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