Evaluation of the Structure of Amorphous Tungsten Oxide $\text{W}_{28}\text{O}_{72}$ by the Combination of Electron-, X-Ray- and Neutron-Diffraction (Three-Beam Experiment)

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From the combination of quantitative electron-diffraction data with X-ray- and neutron-diffraction data (so-called three-beam experiment) the partial structure factors and pair correlation functions of amorphous sputter deposited $\text{W}_{28}\text{O}_{72}$ were determined. On the basis of the experimental atomic distances and coordination numbers, and by comparison with crystalline $\text{WO}_3$, a structural model was developed, which consists of twisted $\text{WO}_6$ octahedra. Reverse Monte Carlo simulation in accordance with the experimental data was performed to verify the results.

Key words: Amorphous Tungsten Oxide; Diffraction; RMC Simulation.