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# The Diffuse Scattering in Electron Diffraction from the High-Temperature Phase of Silver Selenide

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The diffuse scattering as observed in electron diffraction patterns of $\alpha$-$Ag_2Se$ is associated with a disordered silver–vacancy system. Because of the disorder the silver atoms are displaced from their crystallographic positions and one has to account for: (*a*) a characteristic diffuse scattering which can be treated in terms of the kinematical Warren–Averbach–Roberts theory (size displacement effect) [Warren, B. E., Averbach, B. L. & Roberts, B. W. (1951). *J. Appl. Phys.* **22**, 1493; Borie, B. (1957). *Acta Cryst.* **10**, 89; Borie, B. & Sparks C. J. Jr (1971). *Acta Cryst.* A**27**, 198]; (*b*) a change in the Bragg intensities from the presence of Huang scattering in the neighbourhood of the Bragg reflections [Rahlfs, P. (1936). *Z. Phys. Chem.* **31**B, 157]. In relation to the general features and details of the diffuse intensity distribution the structural model for $\alpha$-$Ag_2Se$ as proposed by Rahlfs is reviewed.

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# Lattice Relaxation at Antiphase Boundaries in Ordered Ni–Mo Alloys

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Different types of antiphase boundaries have been studied by electron microscopy in the alloys $Ni_3Mo$ and $Ni_4Mo$ [Van Tendeloo, G., Delavignette, P., Gevers, R., & Amelinckx, S. (1973). *Phys. Stat. Sol.* (*a*), **18**, 85; Ruedl, E., Delavignette, P. & Amelinckx, S. (1968). *Phys. Stat. Sol.* **28**, 305]. Thermal boundaries as well as glide boundaries exhibit a residual contrast when two-beam diffraction conditions are used for a fundamental reflexion [Van Tendeloo, G. & Amelinckx, S. (1974). *Phys. Stat. Sol.* In the press]. From these observations it could be deduced that some relaxation of the lattice has occurred. The presence of excess molybdenum along the interface gives rise to a small supplementary displacement vector $\bar{\varepsilon}$, the total displacement vector for the fault then being $\mathbf{R}+\bar{\varepsilon}$. The direction and the sense of $\bar{\varepsilon}$ have been determined from diffraction experiments; for all different situations the supplementary displacement is equivalent to a small expansion of the boundary regions. Glide antiphase boundaries having a particular orientation seem to have a larger $\bar{\varepsilon}$ vector than the thermal boundaries, which is shown to be consistent with the structural model of the defects. For the $Ni_4Mo$ alloy, where the thermal interfaces are not so strictly confined to crystallographic planes, the dependence of $\bar{\varepsilon}$ on the orientation of the fault is striking.