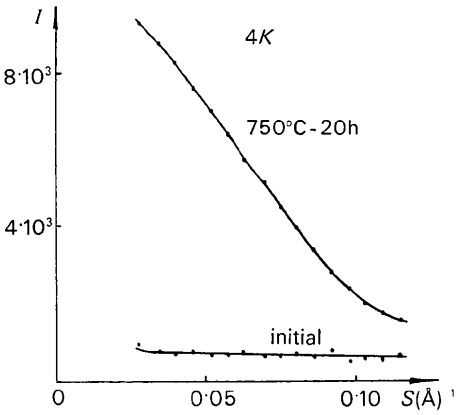

Fig. 7. The SAS curves for the specimen 4*K* in the initial state and after annealing 750°–20 h.

regations in the glassy state. In association with X-ray SAS it is the main source of quantitative information about the kinetics of these processes in their initial stages.

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The Study of Inhomogeneities in Solid Solutions

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Three primary investigation techniques are useful for studying clusters or small particles in solid solution: X-ray small-angle scattering, neutron small-angle scattering, and transmission electron microscopy. Advantages and disadvantages of these methods will be discussed. Combined usage, as for example X-ray and neutron small-angle scattering, to obtain additional information will be considered, and preliminary results on the Zn and Mg content of small G.P. zones in Al–Zn–Mg alloys will be presented. Examples are given where the use of X-ray small-angle scattering has led to further understanding of the nucleation and precipitation phenomena in the alloy systems: Ti–Mo, Al–Zn–Mg, Al–Ge, and Al–In. The primary information is supplemented by results from physical-property measurements. For instance, the resistivity changes of Al–Ge during nucleation of Ge clusters could be interpreted quantitatively and confirmed the model used for analysing the X-ray data. SAS results on age-hardenable alloys help the understanding of mechanical properties in the early stages of precipitation.