

IX. X-RAY DIFFRACTION STUDIES

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RESEARCH OBJECTIVES

The work of this group is concentrated on the application of x-ray diffraction methods to the study of problems of interest to solid state physics. Applications of current interest are:

1. The determination of interatomic force constants and elastic-wave frequency distributions in simple structures from a measurement of the temperature diffuse scattering of x-rays. An application to gold is now in progress.

2. Measurement of long-range and short-range order parameters in binary alloys that show order-disorder changes. A new interpretation of short-range order in Cu_3Au is developing from present studies.

3. Studies of the imperfections that characterize the structure of real materials, in particular the nature of cold work in a deformed metal. Present applications are to the study of deformation in ordered Cu_3Au .

4. Development of the technique for x-ray diffraction study of the structure of non-crystalline materials. Present application is to the simple glasses SiO_2 and B_2O_3 .

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