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Pattern. It is found that in most of the cases the disorder is random but accompanied by molecular displacements (size effect). Its consequences on the various instabilities by these salts will be discussed. In particular those involving the ordering of non centrosymmetric anions X will be interpreted in terms of random interactions or random fields due to the disorder. Incommensurate 2ky SDW and 2ky CDW modulations observed in many quasi 1D conductors can collectively slide under the action of an external electric field when its intensity overcomes a threshold value due to the pinning of the waves to defects. The microscopic basis of this pinning mechanism is up to now poorly documented. Very recently we have succeeded to observe, in the TTF-TCNQ family of charge transfer salts disordered by irradiation or substitution, asymmetric X-ray diffuse scattering effects allowing to determine the phase of the CDW as well as its spatial variation, in the vicinity of the defects. This work has been done in collaboration with V. LAKOVAC, Q. LIU and S. RAY. It has been partly supported by the CEC ESPRIT Basic Research Action MOLCOM 312.

PS-12.02.07 SMALL AND LARGE ANGLE SCATTERING OF ALLOYS CONTAINING COHESIVE PRECIPITATES. By G. Kostorz, Inst. of Applied Physics, Swiss Federal Institute of Technology (ETH) Zurich, Switzerland.

A recent study of the small angle X-ray scattering of Ag-rich Al-Ag single crystals (Ph. A. Dubey, B. Schönfeld and G. Kostorz, Acta Met. Mater. 1991, 39, 1161-170), resulted in a model for the internal structure of Ag-rich Guinier Preston zones (x) forming after an appropriate heat treatment. For the proposed Ag-enriched outer layers of the precipitates, additional confirmation was sought by a diffuse X-ray scattering experiment. The results and the reliability of the information obtained will be discussed for this alloy and other related binary systems. In Ni-rich Ni-Al-Mo alloys, Mo serves to modify the mismatch δ of lattice parameters of the f.c.c. matrix and the coherent, ordered, precipitates forming during decomposition at intermediate temperatures. Single crystals were grown and small angle neutron scattering was used to study the growth rates, size, shape and arrangement of the precipitates as a function of δ in considerable detail. Dependable data for δ were obtained from high resolution X-ray diffraction and subsequent analysis of broadened Bragg peaks. The value of δ has a dramatic influence on the decomposition kinetics and the morphology of these two-phase systems.

PS-12.02.08 FULLERENES AND THE STRUCTURE OF CARBONS

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The discovery of the cage-like molecular allotropic forms of carbon, the fullerences, in particular C_{60} (''buckminsterfullerene''), has been extensively documented (H. W. Kroto, Angew. Chem. Int. Ed. Engl., 1992, 31, 111-129). In C_{60} it was postulated that a carbon atom is located at each vertex of a truncated icosahedron. This structure was subsequently confirmed in single crystal and powder preparations variously using spectroscopy and diffraction (W. Krätschmer et al., Nature, 1990, 347, 355-358; W. F. David et al., Nature, 1991, 353, 147-149).

The possible role of the fullerenes in the constitution of small and non-graphitic carbons is considered in the context of (a) several recent studies, (b) the conclusions drawn in earlier investigations on carbons, including the anticipation of cage-like structures by J. Gibson, M. Holohan, and H. L. Rilley (J. Chem. Soc. Lond., 1945, Part I, 456-461), and (c) the way in which we may now interpret some of Rauschert's very detailed analyses of carbons (Acta Cryst., 1992, 3, 107-117).

PS-12.02.09 STRUCTURAL STUDY OF AMMINE GROUP IN Ni(NH₃)₆C₂H₆ BY X-RAY DIFFRACTION. By M. Shiono*, Y. Yavin, N. Achiwa, Department of Physics, Kyushu University, Higashi-ku, Fukuoka, Japan, and N. Koyano, Research Reactor Institute, Kyoto University, Kumatori, Osaka, Japan.

Crystals of Hexa-ammine Metal complexes are commonly known to have disordered structures due to the rotational motions of the ammiones molecules. We have analysed the electron density distributions of hydrogen atoms in Ni(NH₃)₆C₂H₆ single crystal (space group Pmnm, a = 19.080(1) Å) by X-ray diffraction. Difference Fourier synthesis is used in order to classify the density of hydrogen.

Data were collected with 4-circle diffractometer, Rigaku AFC5R. Monochromatized Mo Kα radiation was used. The total number of reflections measured was 3699 (sinθ/λ = 1.096 Å⁻¹). Averaging procedure gave 328 independent reflections. Least-squares refinement and D-synthesis were performed with 145 reflections (P ≥ 3σ(P)).

The D-Fourier map of the hydrogen density is shown in Fig. 1. The square figure with a peak at the each corner is comparable with the neutron diffraction result of Ni(NH₃)₆C₂H₆ (Iosser,A., Prandi,W., Schiebel,P., and Beger,G. (1989) Physica B 156-157, 85-87). The map in (001) plane is shown in Fig. 2. Cross sections of the hydrogen density are clearly seen. In addition, density of lone pairs of nitrogens appears across the triangular crater from the hydrogen density.