INTRODUCTION FOR THE POINT DEFECT RELAXATION SESSION

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INTRODUCTION FOR THE POINT DEFECT RELAXATION SESSION

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The session about Snoek type relaxation is very rich in new results since more than fifty new peaks are evidenced and characterized.

There is three main subjects, with about 1/3 of the papers in each domain:

1. Relaxation of Irradiation Defects: Mo, Cr and Al alloys
2. Relaxation of Alloys with hydrogen:
   - binary alloys: Lu H
   - quaternary alloys: Ti-V-Al-H
3. Relaxation of Alloys without hydrogen:
   - binary Mo-N, Mo-O, Mo-C, Ta-O
   - ternary Nb-Ti-N, Fe-Ti-N, Fe-V-N, Ce-O2... Y3+

A very accurate atomic model for explaining the observed relaxation modes is given in more than 60% of the papers. Several authors use their pendulum as a supermicroscope. But most of these Microscopic models are established only with Macroscopic observations and they have few chances to survive when improvements in purity or in electronic will allow better experiments. This is the case for the beautiful description of pairs and triplets reorientation in TaO, born 22 years ago, and which is not verified by recent results. However, it seems that the Snoek model describing the carbon relaxation in iron is till now universally admitted!

A striking point will be presented, showing that difficulties arise when internal friction results are compared to those obtained by other techniques. For example a strong difference is found between relaxation strength determined by internal friction or Huang scattering. Another example was given previously when internal friction was compared to magnetic after effect (see W. Chambron et al., Int. Conf. on Fundamental Aspects of Rad. Dam., Gatlinburg, Tennessee, USA, 1975, p. 438).

This means that these techniques do not "see" the defect as a geometrical point, but "see" it as a small perturbed region surrounding the defect. So, there is no reason to observe the same size or symmetry degree when a defect is studied.
simultaneously by different techniques.

And now, what about the future of this very old but extremely active speciality? (This speciality is the eldest of this conference, but if we consider that 64 new peaks were discovered since ICIFUAS-6, this means an average of 1.45 new peak per month!) I think that invaluable informations concerning atom displacements will be obtained by:

- a simultaneous use of different relaxation techniques,
- a clever interpretation with help of Nowick's selection rules.