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Foreword

This issue of the journal is devoted to the physics and chemistry of cluster cooling, and presents contributions from members of the EU Cluster Cooling Network which ran from 2000 to 2004. Members of the network arranged five workshops, starting with a meeting in Jerusalem (2000), followed by Nieuwegein (2001), Strasbourg (2002), Igls (2003) and Rothesay (2004). An important part of these workshops was the training of young scientists, which had special emphasis in Igls where a school on statistical methods was arranged. Guest speakers from outside the network groups appeared at all workshops.

The contributions to the present volume reflect these facts, as well as the mobility of a number of young researchers which was made possible by the network. Several authors, both junior and senior, have coauthored more than one article with different coauthors.

Most articles are experimental and a substantial fraction of them deal with fullerenes and carbon clusters, although metal clusters are also well represented. The topic of the network, cluster cooling, did by its very nature imply decays of statistical nature, in particular at the long time scales represented in the issue by Penning trap and storage ring experiments. One of the important perspectives of cluster cooling is the limits of statistical theories, i.e. to answer the question at what time scales a completely statistical description of decays fails and to find the potential common threads for this short time dynamics for different types of clusters. The result is that the experimental contributions in this issue cover time scales from femtoseconds to seconds.

Another important fact of life is the presence of competing decay channels. This is most easily found in fullerenes due to their high atomic evaporation barrier. Network partners have given fresh examples of how competing channels can be used to determine the least known channel in terms of the best known. This approach has proven particularly productive for fullerene decay for which experimental binding energies and frequency factors now are in good agreement with theoretical values, about two decades after their discovery in molecular beams.

During the initial stages of preparation of this issue we were informed of the death of Chava Lifshitz. With her death the network partners lost a dedicated colleague who until the last few weeks of her life was ready to discuss scientific questions with an interest we can only hope has been conveyed to the younger members of the community. Unfortunately, Chava's group were not in a position to contribute to this issue.

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