



## OPENING TALK

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Mr. Chairman, Ladies and Gentlemen, dear friends and colleagues !

I was honoured very much by an invitation to present a short opening talk to this outstanding Conference. I should start with a remark, that I've got this invitation only two hours ago, just before the breakfast, when it became quite clear, that my old and good friend Hans Frauenfelder is late for the opening ceremony and will be absent here just now when he is so terribly needed.

I understand quite clearly that I can't substitute Hans, but I'll try to do my best and bring in advance all possible apologies.

I should add that I am not only pleased by a possibility to open this Conference but simply happy to be here, among you, to meet many good friends, to start new friendships.

It passed almost 17 years since the discovery of the Mössbauer Effect. The question can arise, whether it is still reasonable to arrange scientific meetings based on the unity of method rather than on the relationship of problems. To my mind the Mössbauer meetings like our Conference are still completely justified, because Mössbauer Effect remains fast expanding to the new fields ; this can be illustrated even by the last letter of Organizing committee. I cite : « the participants belong to various disciplines : physics, chemistry, biology, metallurgy, geology, even archeology and the fine arts ! Your talk will have to cater to this wide spectrum of scientists. For a full resonance between you and the audience your transmission will have to be tuned to match the wide-spread absorption band of the listeners. In other words, fundamental facts in a way understandable to all ». Very strong need is still existing — and may be, is even growing — that the Mössbauer experts know more and more about various diverse fields, where they can use their weapon — the gamma-resonance spectroscopy and, vice versa, representatives of various natural sciences and even of art and archeology learn what they can gain by using the Mössbauer Effect.

I take the liberty to forecast the increasing significance of Mössbauer spectroscopy, to list as examples, close to my own present interests, the following fields of future important broadening and development of problems connected to Mössbauer Effect.

1. The promotion of the problem of creation of nuclear gamma-laser : *gaser*. This problem is tightly connected with possible new ways of strong narrowing of Mössbauer lines by combination of Gamma-Resonance Spectroscopy and Nuclear Magnetic Resonance. You can easily understand, that if we would be able to obtain Mössbauer lines as narrow, as NMR lines in solids, i. e. ca.  $10^{-15}$  eV, a lot of important new problems will be solved, even if the *gaser* itself will not be built. But if it is built, it would be a very important step towards a real revolution in natural sciences, the possibility of molecular holography, i. e. of direct 3-dimensional vision of simple molecules, genes, proteins, etc.

2. The studies (which are particularly important for biology and chemistry) of connections between the changes in electron structure of some particular groups and the preceding or consequent motions of the same or other groups in molecules or more complex systems, like the conformational changes in genes, proteins, nucleic acids, membranes, cells, etc.

3. The study of spacial and time delocalization of electrons which starts to be one of key problems of structural chemistry, of investigations of chemical reactivity of various substances, of biological functions of mitochondria, chloroplasts, etc. Emission Mössbauer spectroscopy can be of large use for such purposes.

4. The investigation of liquid crystals, which seem to be one of the most interesting and useful materials in the near future.

Excuse me for basing this selection of examples on my own interests. I could easily expand this list by mentioning all 20 problems covered by rapporteur sessions of this Conference. It is quite clear, and it was a general feeling already for a long time, that the problematics of Mössbauer Conferences is so wide, that the passage to rapporteur system is inevitable. It was an excellent idea of our Organizing committee to arrange such a system in some novel way by using rapporteurs also as conductors of orchestras of their contributors, because they have obtained the privilege to include in their summarizing talks the solo parties of contributors — and even as long as 2 minutes, describing the most important points of their contributions. The quality of the giant work made by the organizing committee is certainly over any praises. It's enough to mention here only one small fact, which illustrates my words and shows how careful were the organizers of our Conference. Another citation from their last letter : « It may be a good idea to carry slides and transparencies on person (along with passport and driver's licence) to avoid the hazards involved in modern travel. » And I can assure you, that these words were not superfluous — the luggage of one speaker is still somewhere away, but he has his slides here, with his passport, because he followed the wise advice of the Organization committee.

I think, that I will express general opinion by bringing our cordial thanks, our « grand merci » to Prof. Chr. Janot, Dr. J. Friedt and Dr. G. Shenoy — and generally to our beautiful host country — to France. I also think, that everybody feels how wonderful is this small piece of our small world, where we have now a happiness to start this Conference.

Let us end this talk by wishing a great success to our Conference, by wishing health, happiness and prosperity personally to all of us.

Thank you !