

## Foreword

The 2nd Japanese-Soviet Symposium on Ferroelectricity (JSSF-2), which succeeds the 1st Soviet-Japanese Symposium (SJSF-1) in Novosibirsk in 1976, was held in Kyoto in September 6-11, 1980. The Symposium was jointly organized by the Organizing Committee and Physical Society of Japan, in cooperation with Japan Society of Promotion of Science, Japan Society of Applied Physics, and the Crystallographic Society of Japan, and supported by Yamada Science Foundation.

Attendants of the Symposium were; 79 scientists from Japan and 33 from the USSR. The Organizing committee invited 8 Soviet scientists including Prof. A. M. Prokhorov as its guests. The Soviet deligation consisted of members from almost all the institutions and universities which contain research activities for ferroelectrics physics.

The programme covered all aspects of the study of Phase Transitions and Critical Phenomena of Ferroelectrics and the Related Materials. Emphasis was also placed on topics of new practical applications of the above-mentioned materials. Altogether 59 papers were presented orally, 31 from the Japan side and 28 from the Soviet side. As a new attempt, a poster session including 20 papers was taken place, although it could not be shared with nearly equal numbers of contributions from both countries due mainly to the delay of the determination of that policy. The Symposium contained only plenary sessions, and the working schedule was rather hard but with seasonable scientific visits to the Universities of Kyoto and Osaka, and to Matsushita and Murata Companies.

It has been clarified that the onset of the ferroelectricity is closely connected with the instability of various microscopic dynamical modes in crystals. This means that the study of ferroelectrics and the related materials will provide us with indispensable clue for our understanding of microscopic mechanisms which govern the dynamic behaviours of atoms in crystals. Reflecting this fact, the necessity for the study of ferroelectricity is now spreading to wider branches of physics, *e.g.*, to magnetism, quantum optics, low temperature physics, and even to biophysics.

Researches of ferroelectrics in Japan began to flourish in the late decade of 1940 and have been continued as the most active field of physics in Japan. The contributions by Japanese workers have attained presently the highest levels in the world both in their quality and number.

It is the memorable event in our relevant science that a new branch of solid state physics—ferroelectricity was founded by celebrated experiments by Soviet scientists Kurchatov and Kobeko as early as in 1930. Since then Soviet scientists have been making leading contributions in the whole history of the ferroelectrics physics.

Japanese and Soviet workers of ferroelectrics have fostered friendly feeling caused by the neighbouring relation of the countries, and looked for some formal facilities being established for mutual development of researches. It is also expected that such cooperation of scientists of both countries would become the most effective power to the progress of ferroelectricity physics. The first impetus was given in 1976 in a form of the joint symposium—SJSF-1. It fixed the first cornerstone to our noble goal. Thus this Symposium has completed the pair of it.

In this Symposium a wide spectrum of problems—from classical to quantum phenomena—were discussed. It is of natural consequence that incommensurate states occurred in some ferroelectrics attracted the most interest. However, it seems adequate here to add other important topics which characterized this Symposium: the effect of defects on the phase transitions was argued thoroughly over more than a session; several papers appeared on optical activity of ferroelectrics indicating a new theoretical and

experimental approach to the elucidation of phase transitions and practical applications.

It should be properly recorded that the equal privileges and the mutual esteem between the scientists from both countries were strictly and warmly authorized also in this Symposium just as in the 1st Symposium. This fact constitutes the condition for success of the joint symposia of two countries. So it is our common pleasure that this Symposium will undoubtedly contribute to promotion of the friendly relation between the Japanese and the Soviet people.

Summing up, I, on behalf of the Organizing Committee, would like to express my cordial gratitude to every participant to the Symposium for his significant and sincere contribution. I acknowledge the Soviet Local Organizing Committee chaired by Prof. K. S. Alexandrov for the kindest cooperation. It was the glory of this Symposium that it was commenced by the introductory talk from Prof. A. M. Prokhorov. Let me state final but indispensable words that the preparation of this Symposium was greatly facilitated by the devoted endeavours from Prof. L. A. Shuvalov and Prof. G. A. Smolensky, to whom I dedicate the deepest gratitude.

J. Kobayashi  
Chairman