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Early High Tc Activity in Japan: The Franco Rasetti Lecture

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From 1960 to 1980, R&D of superconductivity in Japan was carried out mainly to improve A15 superconducting wires and magnets. Improvement of wires were made mainly in the National Institute for Metals, and improvements of superconducting magnets were made in the Japan Atomic Energy Research Institute for future nuclear fusion reactors, the National Railway Laboratory for future maglev trains and also in the Electro-Technical Laboratory for MHD generators. I began the research of BPBO in 1975 and at that time the research of oxide superconductors was limited only to my laboratory in the University of Tokyo. During the study of this new superconductor, we learned quite a lot on how to make ceramic samples, how to measure electrical conductivity and magnetic susceptibility at low temperatures. In 1982, Prof. S. Nakajima organized a rather small group for investigating “New Superconducting Phenomena,” and I became a member of the group. In 1985, Nakajima expanded the research group to include more than 5 experimentalists and 5 theoreticians. The title of the research was “New Superconducting Materials” and the funds came from the Ministry of Education of Japan. In late October, 1986, we followed the first paper of Bednorz and Muller, and immediately found the material includes high temperature superconductor and reported it to the group meeting held in early November. In early December, we confirmed $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ is the real high temperature superconductor, the critical temperature is 28K. I sent a copy of our paper to Prof. Beasley of California and asked to inform this fact to his colleagues. Asahi Shimbun, the biggest newspaper in Japan announced this in its science section, and then many people knew the high temperature superconductor had been discovered. Then many physicists and chemists rushed to this field very quickly and many kinds of materials were synthesized. In the Government, the Ministry of Education, the Ministry of International Trade and Industry (MITI), and the Agency for Science and Technology began to make new development plans of their own. Superconductivity fever then started in Japan. ISTEC was established in early 1988 under the support of MITI and industries.