Foreword for the 9th Workshop on RF Superconductivity

Particle accelerators have evolved from being specialized instruments of nuclear and particle physics to being the tools of choice for fields as diverse as ion implantation, high-energy particle physics, surface analysis, medical treatments, waste sterilization, airport security, food preservation, spallation neutron physics, and coherent light research. During the past 60 years, the technology of designing and building these machines has matured significantly.

The desire to achieve higher performance in these machines at lower cost is widespread. In the early 1970s, the first tests using superconducting niobium cavities were performed with the intent of taking advantage of the extremely low surface resistance of superconducting material, which would lead to high-efficiency, high-gradient accelerators. These tests heralded the beginnings of radiofrequency (RF) superconductivity as an accelerator technology in its own right.

Since then, scientists around the world have applied this technology in accelerator applications to make higher performance particle accelerators and to better understand the limiting mechanisms in superconducting cavities. In 1980, a workshop on RF superconductivity was held at Karlsruhe to bring together the contributors in the field. This was the first workshop, and now workshops are held every other year.

The 9th Workshop on RF Superconductivity was held in Santa Fe, NM on November 1 to 5, 1999. The workshop was organized by the Los Alamos Neutron Science Center (LANSCE) of Los Alamos National Laboratory. The program covered the status of and advances in RF superconductivity; technical review talks in field emission in niobium cavities, fabrication, cleaning, and surface preparation; RF power delivery; topical reviews related to materials used in superconducting cavity fabrication; and future applications of superconducting technology. The week-long meeting was separated into sessions that included laboratory review talks; invited technical talks on superconducting technology, the quest for high gradients, and future technical directions; a guided open discussion; and posters. The workshop succeeded because of contributions by 185 scientists in the field from over 20 laboratories worldwide.

The successful execution of the 9th Workshop on RF Superconductivity was dependent on two primary factors: the support of our corporate contributors and the dedication and efforts of the Local Organizing Committee. I would like to recognize and thank our sponsors for this workshop: ACCEL Instruments, Sciaky Inc., CERCA, Meyer Tool & Manufacturing Inc., Silicainox, Tokyo Denkai, Advanced Energy Systems Inc., AMAC, CST, LOTEPRO Corporation, Mitsubishi, and Heraeus. Their contributions not only made the meeting more enjoyable, they provided support for seven students to participate in the workshop.

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