

## Preface

This volume of the Journal collects most of the papers delivered in a special session of the 40th Battery Symposium in Japan organized to honor the retirement of Professor Osamu Yamamoto from the Department of Chemistry of the Mie University in Japan.

Professor Osamu Yamamoto is well known in the international battery community. He graduated from Nagoya University, where he later served as Assistant Professor, Lecturer and Associate Professor. He became a Full Professor at Mie University in 1979, where he also acted from 1989 to 1993 as Director of the University Cooperative Research Center. He served as member of numerous Japanese and international scientific committees, edited several books, and published more than 150 papers in highly qualified scientific journals.

Professor Yamamoto's initial research activity was mainly addressed to both the fundamental and the applied aspects of highly ionically conducting solids. As result of this intense activity, Professor Yamamoto is considered to be one of the world pioneers in the solid state ionics field. As a matter of fact, the term "solid state ionics" was coined by him and his co-worker, the late Professor Takahashi [1]. His research in this field began with the synthesis and application of silver ion conductors in 1963. His paper reporting the Ag/Ag<sub>3</sub>SI/I<sub>2</sub> solid state battery [2] had a large impact in the battery academic and industrial community and it is considered a milestone in the field of modern solid electrolyte power sources. His research for new solid electrolytes culminated with the discovery of the Rb<sub>4</sub>Cu<sub>16</sub>I<sub>7</sub>Cl<sub>13</sub> copper ion conductor [3]. This solid electrolyte has a conductivity of 0.35 S cm<sup>-1</sup> at 25°C, i.e., a value which, being comparable to that of aqueous solutions, is still the highest ever found in the whole solid ion conductors family.

Since he moved to Mie University, his research interests have expanded to many fields of energy storage. He

has been involved not only with the investigation of various solid ion conductors and mixed conductors in view of their applications in solid oxide fuel cells, in lithium secondary batteries and in all solid state batteries, but also in the fundamental study of the crystal chemistry and the physical properties of these materials.

Professor Yamamoto has received many scientific and research awards. He served as the Asian Regional Editor of Solid State Ionics and as the President of the International Society of Solid State Ionics from 1994 to 1995. In these positions, he promoted the development and progress of the field, being deeply concerned with the management of international conferences in energy-related areas, such as solid state ionics, lithium batteries and solid oxide fuel cells. In fact, many of the papers reported in this volume cite his or related-to-his-work results.

## References

- [1] T. Takahashi, O. Yamamoto, Solid state ionics — coulometric titrations and measurements of the ionic conductivity of beta Ag<sub>2</sub>Se and beta Ag<sub>2</sub>Te and use of these compounds in an electrochemical analogy memory elements, *J. Electrochem. Soc.* 118 (1971) 1051.
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- [3] T. Takahashi, O. Yamamoto, S. Yamada, S. Hayashi, Solid state ionics: high copper ion conductivity of the system CuCl–CuI–RbCl, *J. Electrochem. Soc.* 126 (1979) 1654.

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