Preface

During the last few years, there have been many exciting new developments in noble gas geochemistry such as the finding of solar-type light noble gases inside the Earth, the identification of cosmogenic noble gases in terrestrial rocks, and the successful application of helium geochemistry to tectonic problems etc. Recent research has also led to a deeper understanding of the basic properties of noble gases relevant to earth science, such as the noble gas partition, and there have been important theoretical studies on atmospheric noble gas fractionation and mantle evolution. In the field of noble gas cosmochemistry, there have been exciting findings, such as the measurement of putative Martian noble gases in SNC meteorites, and the discovery of exotic noble gas component in star dusts in primitive meteorites. It is also important to note developments in recent noble gas mass spectrometry, especially those aided by laser resonance ionization and ultra-high vacuum technology, which now enable us to analyze the isotopic composition of a few thousand noble gas atoms with considerable precision. In addition, noble gas geochemistry, besides its own exciting recent development, has proved to offer a very powerful tool in resolving various problems in Earth and planetary sciences.

Because of the enormous rapidity and the wide scope of the development of noble gas geo- and cosmochemistry, it is now almost impossible even for a specialist to grasp all aspect of current work on this subject. It is also unfortunate it is becoming more difficult for non-specialists to follow the wealth of the new knowledge in noble gas geo- and cosmochemistry that is now being obtained.

Under these circumstances, we strongly felt that the time was ripe to organize a meeting to discuss noble gas geo- and cosmochemistry from various angles, and to promote the exchange of ideas among specialists. We also felt it appropriate to publish the proceeding for a wider audience.

Accordingly, in January 1994 about 90 noble gas geo- and cosmochemists from all over the world met in Kyoto for three days’ discussion. The subjects discussed covered a very wide range of topics in noble gas geo- and cosmochemistry and reflect the state of the art in this field. We hope that these proceedings will encourage (or provoke) further study on noble gas geo- and cosmochemistry among specialists, and will enable a more general audience to obtain access to the state of the art of the subject. We also hope that readers will sense a enthusiasm of the meeting through this volume.

Emeritus Professor Y. Yamada of Osaka University, a distinguished solid state physicist and the director of the Yamada Science Foundation arranged for the support of this meeting by the Foundation. We thank the Yamada Science Foundation for their sponsorship of this Workshop. We also thank the contributors and referees for their efforts and in particular for their cooperation in meeting a tight publication...
schedule. Their cooperation enabled us to publish these proceedings within the same year as the meeting!

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