International Marine Minerals Society

MOORE MEDAL
2014 CITATION

The International Marine Minerals Society (IMMS) presents Akira Usui, with *The Moore Medal*, which is given in the name of Professor J. Robert (Robby) Moore for distinction in the development of marine minerals. Professor Moore conducted marine minerals research at Cardiff University in Wales, Great Britain and the Universities of Harvard, Wisconsin, Alaska, and Texas in the United States. He was committed to the intelligent integration of government, industry, and academia to address the development of marine minerals.

Robby founded the Underwater Mining Institute and IMMS, and he committed his research and many other considerable personal efforts to the multidisciplinary development of marine minerals. *The Moore Medal* is not awarded on any regular basis, but is reserved for those rare occasions when the career of an eminent figure in marine mining and minerals activities warrants such an honor.

*Robert W. Cooke earns a living designing and making monumental sculptures for many customers, mostly in the Northwest. Before becoming a full time artist, Bob was the Exploration Manager for the International Nickel deep seabed mining consortium. He attended many UMIs and became a good friend of the Institute and many of its participants. He designed and made the Moore medal when IMMS decided to initiate the award.*
Akira Usui is a globally recognized expert in the mineralogy and geochemistry of deep-ocean ferromanganese deposits.

Akira graduated from the Department of Mining Engineering in 1973 at the prestigious University of Tokyo and received a Ph.D. in 1979 from the same University. The title of his thesis was “Mineralogical Study of Marine Manganese Nodules, Synthesis of Hydrous Manganese Oxides and their Implications to Genesis and Geochemistry.” The applied approach that Akira gained from a mining engineering background has served him well and has been invaluable in shaping his research and the scope of his many scientific achievements.

After receiving his Ph.D. Akira joined the Geological Survey of Japan in 1980. During his tenure at the GSJ, he participated in many marine minerals research cruises, not only aboard the RV Hakurei-maru for manganese nodules, but also on many other international and national cruises aboard various research vessels, such as the Farnella (UK), Sonne (Germany), Moana Wave (USA), Hakurei-maru No.2, Hakuhou-maru, Tansei-maru, Bousei-maru, Natsushima with the Shinkai 2,000 submersible, and the Yokosuka with the Shinkai 6,500 submersible—his accumulated experience at sea has been over 1000 days. The samples that he collected and the seafloor observations that he made from submersibles and using ROVs have led to a body of significant publications that have advanced our understanding of manganese nodules, ferromanganese crusts, and low-temperature hydrothermal systems.

Akira’s pioneering work on the characterization of manganese minerals found in deep-ocean deposits is known worldwide and has placed him among world-class research scientists. His insights into the mineralogy of ferromanganese deposits and the significance of the mineralogy in the acquisition of metals and in defining the environment of mineral formation are used and cited throughout the marine minerals research community.

Akira’s research covers a wide-range of topics and not only addresses the mechanisms of formation and evolution of these deposits, but also characterizes the seafloor environments in which these deposits occur and how each shapes the other. His latest research on surface molecular chemistry using synchrotron radiation and the use of paleomagnetic stratigraphy to date ferromanganese crusts is breaking fundamentally new ground in minerals research. His interests have also carried him to the terrestrial environment to study manganese precipitation in streams and hot springs. Akira has authored or co-
authored more than 380 papers and abstracts and written or edited 6 books, in Japanese, Korean, and English.

Akira moved to Kochi University in 2003 and just this year, 2014, reached mandatory retirement age. However, because of his research accomplishments and global stature in marine minerals research, he has been granted the opportunity to continue his research in crucial areas of investigation at the university as an Emeritus Professor. During his short time at the University of Kochi, Akira has made a significant contribution to mentoring the next generation of marine minerals researchers, where he has supervised 3 Ph.D. students and mentored 9 others and supervised 8 Masters students and mentored 11 others.

Akira has been engaged in the global marine minerals scientific community for most of his career. He spent about a year at Scripps Institute of Oceanography in the USA as a visiting researcher, 1996-1997. He led the International Marine Minerals Society as its president during 2007 and 2008 and is now an ex officio member of the Executive Board. Akira hosted the 37th Under Water Mining Institute in Tokyo in 2007, which is remembered as one of the best-organized UMI conferences with a spectacular field trip to the beautiful Mt. Fuji area. Akira has been a member of the Japanese delegation to the International Seabed Authority and a key consultant to that delegation as well as to JOGMEC. He is also an editorial board member of the journal Marine Georesources & Geotechnology.

Through research cruises, cooperative research programs, and conferences, Akira has created an international and domestic network of friends and colleagues studying deep-sea minerals. He can be seen talking for hours at parties with these friends and colleagues with a soft drink or tea in hand; his wonderful dry sense of humor during conversations is always a joy to experience.

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Charles L. Morgan, UMI Technical Chair

James R. Hein, IMMS President