

Report

The Dr. Masao Horiba's Award

Introduction

In 2003, on the 50th anniversary of HORIBA's foundation, the HORIBA Group established the Dr. Masao Horiba's Award, named after the company founder, to nurture all domestic and overseas researchers. What follows is the story of how the award was established, setting the purpose of the award, the process from invitation to review of articles, and a summary of the ceremony.

Background to Establishing the Award

HORIBA has made a fresh start for the next half century after greeting its 50th anniversary. It all began as a pioneering student venture business established by Dr. Masao Horiba, the founder and current Supreme Counsel. He developed the company from producing Japan's first glass-electrode pH meter, to producing devices for analyses of liquids, gases, and solids. Further, the company has expanded into global markets as a manufacturer of a comprehensive range of analysis devices. One of the supporters of our development has been affiliation with universities and institutes. The efforts of researchers and engineers who are engaged in continuous fundamental study have also played a powerful role. Out of gratitude from Dr. Masao Horiba towards academic institutions supporting HORIBA, the Dr. Masao Horiba's Award targets the researchers and engineers in universities and public testing and research organizations concentrating on research and development that opens the future of analytical and measurement technologies. Dr. Horiba explains the establishment of awards: For scientists and engineers, it is very important to elucidate a material whose contents, properties, and behaviors are unknown. To tackle such a challenge, an analytical and measurement instrument with advanced sciences and technologies applied is indispensable. In spite of its importance and sophisticated nature, the analytical and measurement instrument itself is not in the spotlight not only in the general society and but also in the academic world. Therefore, we wish to encourage the researchers who are eager to establish further the basics of analytical and measurement.” Dr. Horiba's wish, appealing for the importance of analysis measurement technologies like an ‘unsung hero’ to the World and spotlighting the involved researchers and engineers, has also been a vital driving force for establishing the award.

Purpose of the Award, Intended Applicants and Target Technology Fields

In considering the background to the award establishment, we defined that the purpose of the award would be “To nurture all domestic and overseas researchers pursuing fundamental research which is expected to create innovative analytical and measurement technologies that will enhance the status of analytical and measurement technologies in science and industry.” There is no age limit for the intended applicants as long as they have mastered the basics in the analysis measurement field, however, it is preferable that they are relatively new in their chosen field. Additionally, in the screening that follows, we put emphasis on the potential of the applicant and especially on the feasibility of the innovative measurement device. In the invitation of application, we also announced our expectation that applications would be from researchers who are pursuing unique research and development in the target technology field and can shoulder the future development of analytical and measurement technologies.

We expected that every HORIBA group would get an opportunity to understand the measurement technology in an academic basis. Concentrating on scientific principles and elemental technologies nurtured by HORIBA in analysis and measurement, the Award targets a different field of technology each year. The selected fields will all reflect the HORIBA’s distinctive or unique character, and should be globally evaluated for their achievement and future progress. Based on this concept, we target the following fields sequentially for the first 3 years from the award establishment: “pH” as a measurement principle to analyze liquids, “Infrared” as a measurement principle to analyze gases, and “X-ray” as a measurement principle to analyze solids. The first fields was “pH measurement,” which Dr. Masao Horiba himself engaged in at the time of HORIBA’s foundation.

The “pH measurement” base seemed wide enough from the academic point of view to assign as a target field. The outline is described as follows in the statement of invitation of application:

pH is the one of most important solution property parameters and the importance of pH measurement is obvious with respect to solution reactions, since pH affects even solids or liquids involved in a reaction. However, we believe it is quite significant to review pH basics from the viewpoint of the state of the art science in the 21st century, an era of remarkable technological development. Furthermore, we believe it is also very important to review the important parameter “pH” as implying use of the most advanced technologies, considering its character. We cordially invite applicants who are pursuing unique research and development in a field ranging from basic science to ultimate application of this ageless theme and can shoulder the future development of analytical and measurement technologies.

The following descriptions have been added to the outline of the application for the target technology field. 1) Seed technologies on pH measurement such as principles and equipment development, 2) Application technologies on pH measurement, and additionally “proton measurement applications required in the high-tech materials, nanotechnology, and bio/life science fields and contributions to the development of these fields.”

Prize

We focused on supporting the research activities of the award winners. Along with the 1st prize testimonial, a half million Japanese yen as the extra prize is to be provided at the same time. An additional half million Japanese yen is also provided in the following year and the year after respectively to assist the research. Although the size of the extra prize is much smaller than that of the large scientific grant, HORIBA does not restrict use of the prize to respect each researchers' free ideas and support them continuously. Thus, we expect the prize to enable them to attend international conferences for presentations continually or to hold workshops or symposiums to publish their research results.

Screening Committee

The Screening Committee is consisted of 7 members: The current president Atsushi Horiba as the chairperson, four external expert researchers in both principles and applications of pH measurement fields, and two HORIBA members with a doctor's degree. Professor Ogumi (Kyoto University Graduate school), the vice-chairperson was a successor of the Laboratory of Professor Tatsuzo Okada and Assistant Professor Tomota Nishi (at that time), from whom Dr. Masao Horiba received the instruction on development of the glass electrode for the pH measurement when the company was founded. It is a great pleasure for HORIBA to have him as Vice-Chairperson, considering the meaningful relationship that HORIBA earned with him.

Applications and Screening

Prior to receiving applications for the award, we distributed the announcement document describing the outline of the application and the statement as well as Dr. Horiba's wish to universities and public testing and research organizations. We opened a home page, too, for on-line applications. We also created the award logo in accordance with the ideas of the internal designers alongside creating the award information (Figure 1).

16 articles from domestic researchers and a submission from abroad were submitted during approximately two months from the beginning of May. The submitted research included searching for measurement principles beyond electrochemistry, pH measurement technology, and applied research designing pH measurement used in the most advanced technologies.

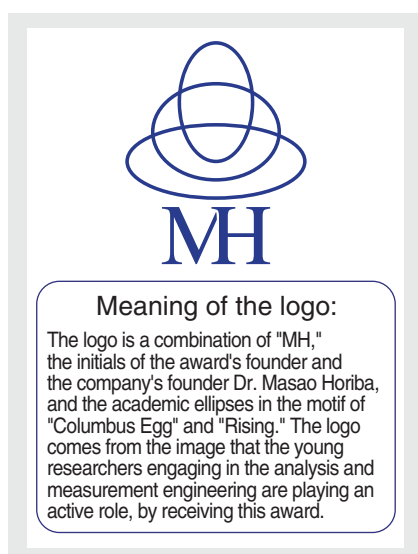


Figure 1 Logo

Thus, the submissions for pH measurement from a wide variety of fields seemed to verify the wide scope of pH measurement, which was exactly our intention. For screening, the focus was put not only on the applicant's achievement but also on potential for development. At first, peer review of the first selection was performed by the committee and then a discussion was held. Every application had uniqueness and potential, and gave us the impression of a serious attitude to research. The HORIBA board meeting selected three winners for the best potential from the shortlisted candidates. Their great enthusiasm for the research, which could be felt just from reading the paper, was also highly appreciated.

Award Ceremony and Memorial Lecture

The award ceremony and memorial lecture was held on October 18th, the day after the anniversary of the Horiba Radio Laboratory established by Dr. Masao Horiba^{*1}. The following events were held on that day: 1) The ceremony for the company members in HORIBA office, 2) the memorial lecture with external researchers attending, 3) the award ceremony and the party with administration related guests attending. We organized this so that the winners could have the opportunity to introduce their study widely and appeal for the importance of the analysis measurement research to society. This, as well as that HORIBA could have opportunities to take an academic view of the measurement principle. The ceremony at the HORIBA office was held at the morning meeting, which the all employees attend. The seminar, the award ceremony, and the party were held in the afternoon at Shiran Kaikan hall in the Kyoto University. Time was provided between the morning ceremony and the afternoon lecture to show the winners around the HORIBA office and to share information with the HORIBA researchers and engineers.

In the morning ceremony, the testimonials were presented by Atsushi Horiba, the chairperson, followed by introduction of the summary of each research to the HORIBA members. This ceremony can be regarded as a very important opportunity since all the HORIBA members are able to honor the winners together at the same time, understand the meaning of the award establishment and have a chance to know the most advanced research of measurement principle.

In the memorial lecture at Kyoto University, which we regarded as an opportunity to introduce the winners' research, we held the award lecture by the winners together with the poster session inviting the experts on pH measurement and related subjects from various fields. The reason we arranged both the lecture and the poster session was based on our concern to allow the winners to have opportunities to converse and discuss with as many people as possible. Actually, many from the audience surrounded the winners and lively talked with them, even after the scheduled time of the poster session.

*1: Held the following day, 18th October, as the 17th October was a Sunday.

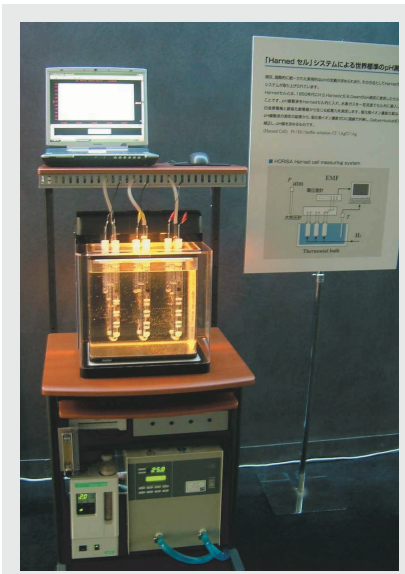


Figure 2 Harned Cell
(Instructed by Dr. Susumu Nakamura, screening committee member of the award, Senior Research Scientist, National Institute of Advanced Industrial Science and Technology)

Dr. Masao Horiba gave the memorial speech between the winners lecture and the poster session. “It is analytical and measurement technology that is the foundation supporting all the sciences. I wish to spotlight those who are engaging in its research continuously and passionately”. To commemorate the day, the HORIBA members, mainly composed of development and production staff for pH measurement, built up the Harned Cell (Figure 2), the standard for pH measurement, for exhibition at the ceremony hall. Also, pamphlets were distributed and panels were displayed to explain HORIBA’s history in pH measurement, which showed HORIBA’s high potential (Figure 3).

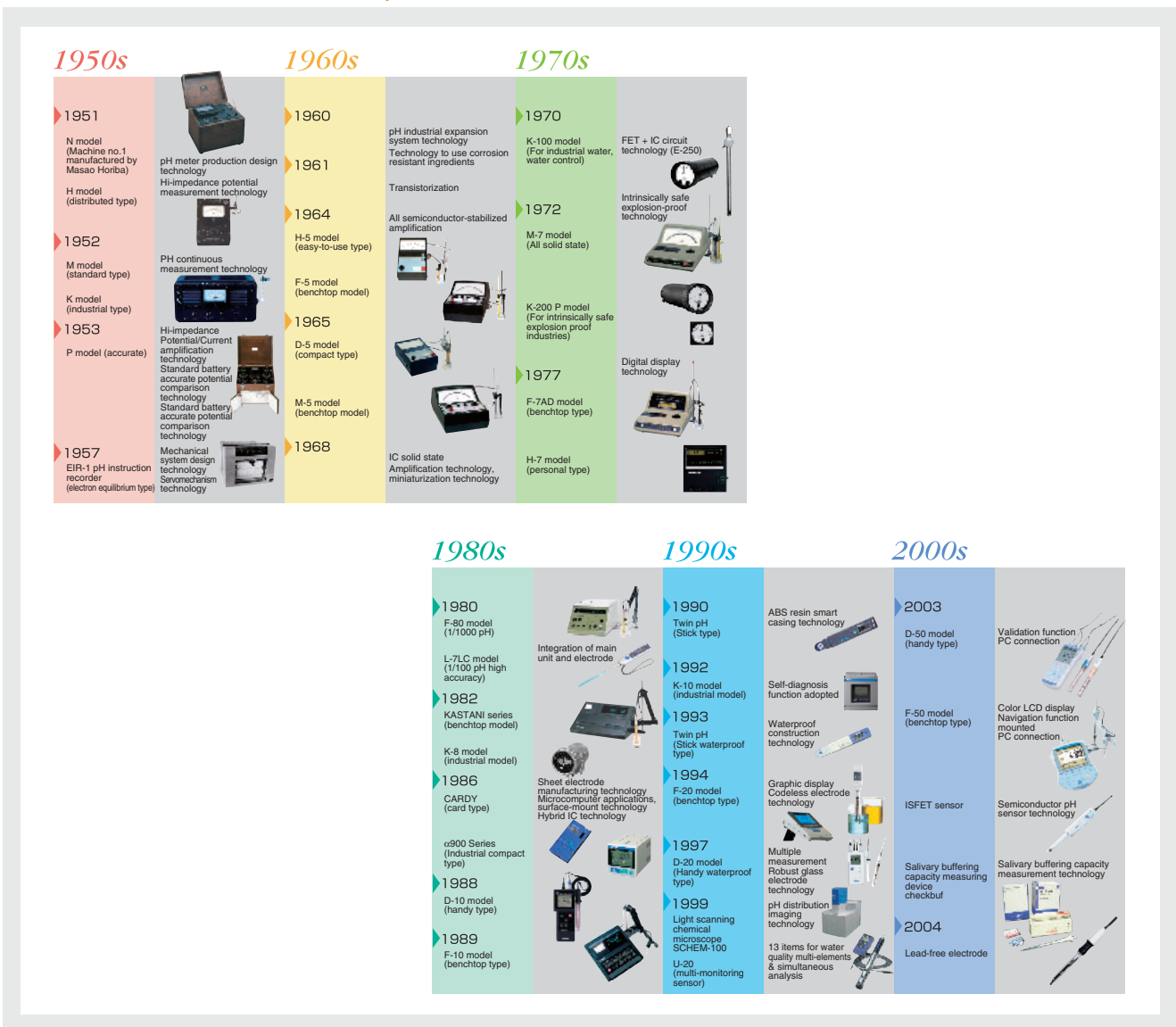


Figure 3 History of pH Meters

The award ceremony and the party were held with the administration related guests as well as above-mentioned external researchers invited. At the ceremony, we introduced the importance of winners' research to an audience ostensibly from non-technology fields, using the slides and narration. Then the trophy was presented to the winner by Dr. Masao Horiba, followed by review of screening by Professor Ogumi, the Vice-Chairperson, to close the ceremony. Professor Ogumi said that all the research was unique and gave us serious impressions of the applicants. This was especially true of the winners' research. Their works were excellent enough to catch our eye because they stuck to the basics as well as contributed to advanced research. He also commented that the both application and screening matched with the award purpose.

The memorial picture (Figure 4) was taken after the ceremony. All attendees enjoyed the relaxed atmosphere at the following party. At the party, the winners made speeches to talk about the development of future research. In response, the external committee members offered their warm encouragement to the winners. Also all attendees enjoyed fruitful talks, such as cross industrial exchange or exchange between the administration related guests and the internal/external researchers. Thus we closed the ceremony in a festive mood.



Figure 4 Commemorative Picture of the Award Winners with the Committee Members

Conclusion

We have described the background, purpose and the process of establishment of the Dr. Masao Horiba's Award, so far. We believe we have obtained ample instances of work reflecting the original purpose of the award, as exactly represented by the research subjects applied and the screening process. Using this experience, infrared measurement, one of the HORIBA's core technology measurement principles, will be the target technology field of Award 2005.

By expanding the view from principle to application in the target field of pH measurement, we have been able to confirm the importance of measurement as well as appreciate the trends in state of the art technology. This experience will be a great power for the HORIBA group to continue its unique business based on "technology."

<Outline of the Application>

[Qualification of Applicants]

Researchers or engineers who belong to universities and public testing and research organizations.

[Target Technology Field] “pH measurement” for the first year. (Any measurement method is accepted from basics to actual applications.)

[Screening Method] The Screening Committee discusses the achievements and the prospects based on the submitted application documents and determines the Award winners.

[Announcement] Up to 5 winners’ work will be announced.

[Prize] The testimonial and the further grants will be provided.

(Up to 1,500,000 yen per winner to be provided as the extra award.)

[Ceremony] October 18th 2004 (Monday) at Shiran Kaikan hall in the Kyoto University.

(11-1 Ushinomiya Yoshida Sakyo-ku, Kyoto-city)

The research to be published to the society through the lecture by the winner or the panel discussions.

[Period of Application] From May 10th 2004 (Monday) to July 30th 2004 (Friday)

[How to Apply] Apply with the specified application form, letter of recommendation, technical data, articles on the relevant research, list of articles from past 10 years, and so on.

For details including an application form, refer to our home page:

<http://www.mh-award.org/>

[Contact] 2 Miyanohigashi-cho Kisshoin Minami-ku, Kyoto 601-8510 Japan

The Dr. Masao Horiba’s Award office c/o HORIBA, LTD. TEL 075-313-8121

E-mail: info@mh-award.org

[Screening Committee] (Titles are omitted)

Honorary chairperson : Masao Horiba (Chairman, HORIBA, Ltd.)

Chairperson : Atsushi Horiba (President and CEO, HORIBA, Ltd.)

Vice chairperson : Zempachi Ogumi (Professor, Department of Energy & Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University)

Member : Satoshi Ichiyama (Professor, Department of Clinical Laboratory Medicine and Infectious Diseases, Graduate School of Medicine, Kyoto University)

Tetsuya Osaka (Professor, Department of Applied Chemistry, Waseda University)

Susumu Nakamura (Senior Research Scientist, National Institute of Advanced Industrial Science and Technology)

<Award Winners and the Content of Awarded Research>

- Kiwamu Sue, Research Associate, Graduate School of Environmental Studies, Tohoku University
Awarded theme : Development of apparatus for potentiometric pH measurement for supercritical aqueous solutions
- Naoki Sugimoto, Director, Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University and Professor, Department of Chemistry of Functional Molecules, Faculty of Science and Engineering, Konan University
Awarded theme : Development of an intracellular pH measurement method using DNA as a sensing material
- Kiminori Shitashima, Senior Research Scientist, Environment Science Research Laboratory, Central Research Institute of Electric Power Industry
Awarded theme : Development of an ISFET sensor for in-situ pH measurement in the ocean