Opening the Unknown Deep Sea: The World as Seen by a Submersible Pilot

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The oceans, which cover about 70% of the Earth's surface, are the most familiar to us humans, yet most of them are still shrouded in mystery. In particular, the "deep sea," which accounts for about 95% of the world's oceans and is deeper than 200 m, is not easy to survey due to its high water pressure (so high that a light car can fit on your fingertip at a depth of 6500 m). Although the deep sea is a harsh environment of "high pressure,""low temperature,""darkness," and scarcity of food resources, it is home to unique organisms and ecosystems that have evolved in their own unique way, and the seafloor contains valuable information for elucidating the internal structure of the earth, past environmental changes, and evolution. Understanding this information is important in considering how to use the ocean in a sustainable manner while protecting biodiversity and ecosystems.
There are two main methods of deep-sea research: one is unmanned exploration using robots (ROVs,AUVs,etc.) and observation equipment, and the other is human exploration using submersible research vessels. Among these, I support the research as a pilot of The research submersible Shinkai 6500.
Many people think of a pilot as a just steer the ship, but in reality, the duties of a pilot include a wide range of tasks such as maintenance and navigation control. These are the knowledge necessary for safe and successful research, and we are engaged in a battle of wits with nature, which changes on a daily basis. In addition, while working on board the ship, I have come to realize the diverse roles of deep-sea research, including human resource development, synergy effects among different industries and fields, and simulated cooperative experience, in addition to the main mission of research and study.
The deep sea is unknown and presents many challenges. I believe that if people of all specialties, ages, genders, and nationalities get involved in deep-sea research, new ideas and research discoveries will emerge to solve problems. In order to realize "an attractive ocean with dreams," which is one of the objectives of the United Nations Decade of Ocean Science, it is necessary to increase opportunities to experience the field in parallel with outreach activities including video materials, web materials, and books.
In this lecture, I will take you on a tour of the unknown world of the deep sea, as seen from the perspective of a pilot of a submersible research vessel engaged in front-line research. We will convey the fascination of oceanographic research, including deep-sea research, and also discuss the challenges we see there. We hope this will be an opportunity to share the excitement of opening up an unknown world and to stimulate and nurture a "spirit of inquiry" for the future.

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