

The progress of researches on REY-rich mud —A general overview —

*Yasuhiro Kato^{1,2,3,5}, Kentaro Nakamura², Koichiro Fujinaga^{3,1}, Kazutaka Yasukawa^{2,3}, Yutaro Takaya^{4,3}, Junichiro Ohta^{3,1}, Erika Tanaka², Kazuhide Mimura², Koichi Iijima^{5,2}, Shiki Machida^{3,1}, Tatsuo Nozaki^{5,3,1,6}, Jun-Ichi Kimura⁷, Hikaru Iwamori^{7,8}

1. Frontier Research Center for Energy and Resources, Graduate School of Engineering, University of Tokyo, 2. Department of Systems Innovation, School of Engineering, University of Tokyo, 3. Ocean Resources Research Center for Next Generation, Chiba Institute of Technology, 4. Department of Resources and Environmental Engineering School of Creative Science and Engineering, Waseda University, 5. Research and Development Center for Submarine Resources, Japan Agency for Marine-Earth Science and Technology, 6. Department of Planetology, Graduate School of Science, Kobe University, 7. Geochemical Evolution Research Program, Japan Agency for Marine-Earth Science and Technology, 8. Department of Earth and Planetary Sciences, School of Science, Tokyo Institute of Technology

Since the discovery of deep-sea sediment extremely enriched in rare-earth elements and yttrium (REY) within the Japanese Exclusive Economic Zone (EEZ) around Minamitorishima Island, we have conducted a variety of researches on the REY-rich mud such as geochemical and statistical analyses, careful investigation of sub-bottom profiling data, and experiments of a mineral processing technique, toward a near-future development of the new and highly promising resource for the industrially critical elements. Our findings are bringing the seafloor mineral resources, which are merely an object of “scientific research” so far, to a realistic target of “commercial development” for the first time in the human being’s history. Moreover, we also investigate the spatial distribution of REY-rich mud in an oceanwide scale and its controlling factor(s) from a perspective of Earth system dynamics. In the presentation, we report a general overview of the latest research results on REY-rich mud.

Keywords: seafloor mineral resources, rare-earth elements, REY-rich mud, Minamitorishima Island, Pacific Ocean, deep-sea sediment