

S001-02

Zoom meeting A : 11/1 AM1 (9:00-10:30)

9:15~9:30

## 地磁気・古地磁気・岩石磁気分野の展望と技術開発・研究環境整備の必要性

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## Future Prospects, Technology Developments and Research Environments in Geomagnetism, Paleomagnetism and Rock Magnetism

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Research Fields in Geomagnetism, Paleomagnetism and Rock Magnetism includes vast topics with different aspects of Earth and Planetary Sciences. Here, we review recent developments of the research fields and provide future perspectives. In Geomagnetism, geodynamo simulation in a realistic manner is one of the important goals as well as low noise observation at the observatories and satellites. International Geomagnetic Reference Field is one of the visible outputs. In Paleomagnetism, there are several research directions. One is the researches aiming at understanding the fundamental properties of the Earth's magnetic field from its initiation to the future. Again, geodynamo simulation combined with the paleomagnetic data should play an important role in unraveling the process in the Earth's core. Another is the researches on application of the Earth's magnetic field on tectonics, stratigraphy and other processes in geology and geophysics. Magnetostratigraphy is one of the important applications providing chronology in geology, which is exemplified by Chibanian and Chiba section; a recently approved GSSP. Magnetic anomaly is also an important topic and further understanding will be needed in terms of the source of magnetization and tectonic processes. Magnetic anomalies of planetary bodies are also important in understanding their core formations and later developments. Studies on samples returned from Moon and Planets may also need to be considered together with those on meteorites. In rock magnetism, there are research directions in foundations and applications. Foundations consists of observations and measurements at atomic to nanometer scale with state-of-the-art microscopes etc. and micro-magnetic simulations. Unmixing of natural mixtures using non-destructive magnetic measurements such as first-order-reversal-curve, ferromagnetic resonance, etc. are developing. Technologies such as machine learning may accelerate the software developments for unmixing and inversion. Rock magnetism is important in enhancing the reliability and implications of paleomagnetism. Also, environmental magnetism is one of the important applications providing values in geological history together with the proxies other than magnetism. Considering the above mentioned situations in the fields, we try to summarize the necessity in Technology Developments and Research Environments for the future growth of the fields in the coming ten years.