**R004-17**
**Zoom meeting A ：11/4 PM2 (15:45-18:15)**
**15:45〜16:00**

# Basic properties of shock remanent magnetization for single-domain titanomagnetite

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Shock remanent magnetization (SRM) is acquired as a result of the shock wave propagation in a magnetic field. Knowledge of a three-dimensional distribution of the SRM intensity is crucial for interpreting the spatial change in magnetic anomalies observed over the crater and reconstructing the paleo-planetary field based on the anomaly data. However, the intensity distribution is an unexplained phenomena concerning SRM properties owing to the lack of subsample magnetization measurements for the experimental SRM-imparted samples. To investigate the SRM intensity and stability structures using a magnetically well-characterized basalt sample bearing fine-grained single-domain titanomagnetite, we conducted the newly designed SRM acquisition experiments and remanence measurements for cube-shaped subsamples cut from the SRM-imparted samples. The pressure and temperature changes during the shock wave propagation were estimated from the impact simulations. From the experimental results of cylindrical samples with 10 cm in diameter and length, three distinctive aspects of SRM properties are recognized at different pressure ranges: (1) the SRM intensity is almost constant below 0.1 GPa, (2) the SRM intensity linearly increases with increasing pressure up to 1.1 GPa, and (3) the SRM intensity is almost constant, while the SRM stability increases with increasing pressure above 1.9 GPa. Regarding the SRM acquisition mechanisms, the pressure effect was likely dominant below 1.1 GPa, while multiple factors can be considered in the high-pressure range. The systematic changes in the SRM intensity and stability suggest that the crustal rocks containing the single-domain titanomagnetite had an SRM intensity structure at the time of impact, and this structure changed subsequently. Comparing the SRM structures of different experimental settings such as target size, projectile condition, and field intensity, we will evaluate the basic properties of SRM and will discuss the remanence acquisition mechanisms.