

北インド Jhansi 地域の巨大シュードタキライトの微細鉱物組織と岩石磁気

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Rock magnetism and petrology of gigantic pseudotachylitic breccias body in Northern India

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The gigantic pseudotachylitic breccias body has been newly discovered near the city of Jhansi, Northern India. The body extends c.a. 30m wide and at least 1500m long, which is a two-order-of-magnitude larger than a usual fault-origin pseudotachylite (several centimeters in width and several meter in length). This body occurs within Archean Bundelkhand granitoids (2.5Ga). Previous paleomagnetic study of Sudbury pseudotachylites indicated that impact-origin pseudotachylites are a good candidate for the paleomagnetic recorder of ancient Earth's field if the micro texture is of cryptocrystalline matrix with a submicron magnetite assemblage. However, no paleomagnetic and petrologic studies of this body has been conducted yet. Therefore, we examined the rock magnetism and petrology of the body to confirm whether this body is suitable for paleomagnetic studies for a pre-Cambrian Earth's field. Our petrologic results showed that the body contains numerous clasts of quartz and feldspar in a fine-grained matrix with numerous microlites of plagioclase and clinopyroxene composition. Microlite morphology varies from simple acicular and lath-like shapes to complex spherulitic and dendritic patterns which are mostly composed of plagioclase. These morphologies of microlites in the body are indicative of formation from rapid cooling or quenching of a melt. There is no recycled pseudotachylites fragments, but it only shows little undulose extinction and deformation lamella in quartz clasts, suggesting a single event of pseudotachylite formation and its impact-origin. High temperature hysteresis showed that the Curie temperature is of 585C, suggesting the presence of magnetite. The intensity of natural remanent magnetization (NRM) ranges widely between 0.1-10 A/m. The ratio of NRM over saturation isothermal remanence ranges from 0.2-4.2% which is of normal thermal remanence in origin, except of 18% (two samples: possibly lightning in origin). These preliminary results suggest that this body would be suitable for paleomagnetic studies. In the presentation, we will present further paleomagnetic results of this body.