

R004-09

Zoom meeting A : 11/4 AM2 (10:45-12:30)

11:30-11:45

本州中部，土岐花崗岩体の周辺に発達する接触変成岩の古地磁気学的研究

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Paleomagnetic study of contact metamorphic rocks around the Cretaceous Toki granite in central Japan

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This study presents rock magnetic and paleomagnetic results from a contact metamorphic aureole around the late Cretaceous (~70 Ma) Toki granite in central Japan. To investigate the relationship between rock magnetic and paleomagnetic characteristics and metamorphic grade, we collected oriented samples of metasedimentary (mainly pelitic and psammitic) rocks at 10 sites according to the distance from the intrusion contact. We performed progressive thermal demagnetization (PThD) of natural remanent magnetization, anisotropy of magnetic susceptibility (AMS) measurement, and PThD of three-axis isothermal remanent magnetization for the samples. The results suggest that characteristic remanent magnetizations (ChRMs) mainly reside in pyrrhotite and were acquired after tilting of strata as a secondary chemical remanent magnetization or thermoremanent magnetization. The ChRM directions have dual polarities, even at the same site, and they are almost antiparallel, indicating magnetization acquisition over a fairly long period of time. In addition, the ChRM directions are easterly deflected from the geocentric axial dipole field direction in geographic (in situ) coordinates, suggesting that they were acquired sometime between the granite intrusion and the Miocene clockwise rotation of southwest Japan. Possibly, the ChRMs were acquired during or immediately after contact metamorphism. The results of AMS and outcrop observations show that the metamorphic rocks in this area were not simply affected by heat from the Toki granite but were also affected by deformation during metamorphism.

本研究で筆者らは、本州中部の白亜紀後期(~70Ma)の土岐花崗岩体周辺の接触変成帯から得られた岩石磁気・古地磁気学的結果を紹介する。岩石磁気・古地磁気学的性質と変成度との関係を検討するために、筆者らは10サイトの変成岩(主に泥質と砂質)の定方位試料を土岐花崗岩体からの距離に応じて採取した。これらの試料に対して、自然残留磁化の段階熱消磁(PThD)、帯磁率異方性(AMS)の測定、3軸等温残留磁化のPThDなどを行った。それらの結果は、特徴残留磁化(ChRM)は主にピロタイトが担い、地層傾動後に二次的な化学残留磁化または熱残留磁化として獲得されたことを示唆する。ChRM方位は同一サイトであっても両極性を持ち、それらはほぼ反平行であることから、かなり長い時間をかけて磁化が獲得されたことを示す。また、ChRM方位は地理的(in situ)座標において地心軸双極子磁場方位から東偏しており、このことはChRMが花崗岩貫入と中新世の西南日本の時計回り回転との間に獲得されたことを示唆する。AMSや露頭での岩石観察の結果は、この地域の変成岩は土岐花崗岩による被熱の影響だけでなく変成時に変形の影響も受けたことを示す。