ポスター | R8：変成岩とテクトニクス

2025年9月10日(水) 12:30 ~ 14:00 ポスター会場 (16番教室)

R8：変成岩とテクトニクス

研究発表優秀賞エントリー

[R8-P-07] インド・ダルワールクラトンの地殻規模の剪断帯における花崗岩質マイロナイトの微細構造発達と変形条件

*浦川 真登[1]、スリハリ ラクシュマナン[1]、中村 佳博[2] (1. 島根大、2. 産総研)

キーワード：ダルワールクラトン、マイロナイト、石英微細構造、フラクタル次元、電子後方散乱回折

The Gadag-Mandya Shear Zone (GMSZ) is a N-S trending, crustal-scale, strike-slip sinistral shear zone, located within the Dharwar Craton, southern India. This study investigates spatial variation in deformation mechanisms and deformation conditions along the GMSZ through analyses of granite mylonites using optical microscopy, SEM-EBSD, and fractal analysis of dynamically recrystallized quartz grains.

In the northern zone of GMSZ, quartz exhibits ribbon structures and chessboard extinction, indicative of high-T deformation dominated by grain boundary migration (GBM). These microstructures suggest deformation T > 500 °C (Stipp et al., 2002). The absence of hydrous minerals such as muscovite and biotite support a dry, high-T deformation likely a syn-magmatic deformation. EBSD c-axis pole figures reveal type-II crossed girdle patterns, associated with prism slip at high-T deformation. Fractal dimension (D) values are relatively low (D ≈ 1.12-1.14), corresponding to deformation-T of ~600-650 °C (Kruhl & Nega, 1996).

In the central zone, well-developed S-C and C-C′ fabrics are present. The dominant recrystallization mechanisms, bulging (BLG) and subgrain rotation (SGR) are active at ~300-500 °C (Stipp et al., 2002). EBSD pole figures reveals type-I crossed girdles, also suggesting prism slip. The coexistence of moderate-T microstructures with high-T slip systems may reflect overprinting by localized shear or transient heating. D-values (≈ 1.12-1.19) corresponding to deformation-T of ~500-650 °C (Kruhl & Nega, 1996). Muscovite is aligned along foliation, with minor biotite.

In the southern zone, ultramylonites are locally developed. Quartz is extremely fine-grained, and amphibole and orthopyroxene along the foliation exhibit ductile deformation textures, suggesting high-T deformation. Quartz contains many subgrains with both GBM and SGR. However, EBSD pole figures show clustering along the Z-axis with no Y-axis concentration, suggesting basal slip, possibly reflecting overprinting by later, lower-T deformation. D-values are lowest (D ≈ 1.05-1.07), corresponding to deformation-T of ~700 °C (Kruhl & Nega, 1996). Foliation contains aligned amphibole, biotite, and muscovite, which may also suggest overprinting by lower-grade deformation during the later stages.