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东喜马拉雅构造结墨脱剪切带特征及其区域构造意义

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摘要:

东喜马拉雅构造结东、西两侧分别为墨脱剪切带和东久-米林剪切带, 本文以墨脱剪切带为研究对象, 从构造变形几何学和组构运动学方面进行详细研究. 结果表明:①剪切带不同部位的变形性质具有逐渐演化的特征, 基于产状、变形性质及变质程度等的变化将其从南到北分为三部分: NE走向具右行兼上盘下滑性质的阿尼桥-希让段、近N-S向具右行走滑性质的旁辛-达木段及N(N)W向具右行兼逆冲性质的甘登-加拉萨段; ②在墨脱剪切带内识别出两类剪切变形: 高温剪切变形和低温剪切变形. 除了构造变形及岩相学证据外, 石英EBSD组构数据显示区内高温剪切变形以{1010}滑移系为主, 对应的温度为550~650°C, 达到高温角闪岩相, 局部(北端和中段)还出现了{1010}滑移系, 温度更高, 大于650°C, 相当于下地壳的深度; 低温剪切变形以{1011}和{0001}滑移系为主, 对应的温度小于550°C, 即剪切变形发生在绿片岩相或绿片岩相以下的构造环境. 结合西界东久-米林剪切带的构造特征, 推测在印度板块和欧亚板块碰撞之后, 南迦巴瓦变质体受制于这两条剪切带而相对拉萨地体向北推移, 并楔入拉萨地体之下.

英文摘要:

The Eastern Himalayan Syntaxis is bounded by the Medog shear zone in the east and the Dongjiu-Milin shear zone in the west. This paper focuses on the geometry and kinematics of Medog shear zone, which can be further divided into three sections according to the structure, deformation and metamorphic grade: the NE-SW trending Aniqiao-Xirang normal-sense shear zone, the N-S trending Pangxin-Damu dextral shear zone and the NW-SE trending Jialasa-Gandeng thrust-sense shear zone. Based on structural deformation, petrography and the quartz EBSD fabrics, two patterns of deformation in the Medog shear zone are observed, which are high-temperature and low-temperature deformations, respectively. The study shows that high-temperature deformation is mainly within {1010} slip system, with accordant temperature of 550~650°C (amphibolite facies). In addition, {1010} slip system was also observed in the northern and middle of the Medog shear zone, which means that the deformation temperature can be even higher than 650°C. The low-temperature deformation is mainly within {1011} and {0001} slip systems, which indicate lower temperature of <550°C and green-schist facies. Combining with the Dongjiu-Milin shear zone, it is suggested that the Namche Barwa metamorphic terrane was constrained by the two shear zones, then moved northward and subducted deeply beneath the Lhasa terrane.

关键词: [构造变形](#) [石英EBSD组构](#) [墨脱剪切带](#) [东喜马拉雅构造结](#)

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