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Different slip systems controlling crystallographic preferred orientation and intracrystalline deformation of amphibole in mylonites from the Neyriz mantle diapir, Iran

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1 **Different slip systems controlling crystallographic preferred orientation and**
2 **intracrystalline deformation of amphibole in mylonites from the Neyriz mantle diapir, Iran**

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19 **Abstract**

20 A deformed layered gabbro and a mylonitic gabbro sample from the marginal shear zone of
21 the Neyriz mantle diapir in Iran were analyzed using electron backscatter diffraction (EBSD).
22 Both samples have the common amphibole crystallographic preferred orientation (CPO) in
23 which (100) lies perpendicular to foliation and <001> parallel to lineation. Amphibole grains in
24 the layered gabbro sample have little internal deformation, whereas in the mylonitic gabbro
25 sample the amphibole grains are strongly distorted and contain low angle grain boundaries.
26 There is a subtle change in CPO as a function of grain size in the mylonitic gabbro. Coarse
27 grains (porphyroclasts) have a (100) <001> CPO oriented with the main foliation reference
28 frame whilst fine grains have a (100) <001> CPO oriented with the C' shear bands. Detailed

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