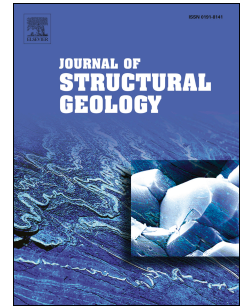


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Mimicking shear zones: An example from Wadi Filk, Jordan

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## 1 MIMICKING SHEAR ZONES: AN EXAMPLE FROM WADI FILK, JORDAN

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## 8 ABSTRACT

9 Ductile shear zones can develop in at least two ways: (1) a nucleus can grow laterally by free  
10 propagation into undeformed host rock, like most faults or joints; (2) the zone may nucleate and  
11 grow on or in a planar discontinuity and mimic its orientation. Most small-scale ductile shear  
12 zones are mimicking zones, but large-scale ductile shear zones could be free-propagating. The  
13 Wadi Filk mylonite zone in Jordan is a two km long, ten meter wide mylonite zone flanked by  
14 ultramylonite zones, developed in undeformed Neoproterozoic porphyritic monzogranite. Since  
15 mineral and major element composition of mylonite and monzogranite are identical, the structure  
16 seems to have formed by free propagation. Only detailed observations of the microstructure and  
17 trace element chemistry of the mylonite indicate that it is mimicking a precursor rhyolitic dyke.  
18 The Wadi Filk mylonite zone shows that even km-scale ductile shear zones can be mimicking  
19 dykes. Fine-grained chilled margins of dykes can act as a nucleus of ultramylonite formation.

20

21 Keywords: mimicking shear zone, mylonite, rhyolite, shear zone nucleation, chilled margin,  
22 paired shear zones

23

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