



## **Fabrics and geochronology of the Wushan ductile shear zone: Tectonic implications for the Shangdan suture zone in the Qinling orogen, Central China**

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The ductile shearing along the Shangdan suture zone during the Paleozoic time is a key to understand the collisional deformation and tectonic regime of amalgamation between the North China Block and the South China Blocks. The Wushan ductile shear zone, a branch of the Shangdan suture, records mylonitic deformation that affected granitic and felsic rocks outcropping in an over 1 km wide belt in the western Qinling Orogenic belt. Shear sense indicators and kinematic vorticity number (0.79–0.99) of the mylonites reveal a dextral shear deformation. The quartz c-axis fabrics indicate activation of combined basal <a> and rhomb <a> slip, prism <a> slip and prism <c> slip. The dynamic recrystallization of quartz is accommodated by combined subgrain rotation and grain boundary migration. These characteristics suggest that the mylonites experienced ductile shear deformation under amphibolite facies conditions at temperatures of 500–650 C. Zircons from granitic mylonite yield a U-Pb age of  $910 \pm 4.8$  Ma, which represents the formation age of the protolith of the mylonite. The ductile shear zone was intruded by a granitic dyke, which yields a zircon U-Pb age of  $403 \pm 3.5$  Ma constraining the minimum age of the ductile shear deformation. Together with regional geology and available geochronological data, these structural characteristics and ages indicate that the Wushan ductile shear zone was formed by dextral shearing following the N-S shortening as a result of collision between the North China and South China blocks along the Shangdan suture.