$^{40}Ar/^{39}Ar$ geochronology of the Yuanbaoshan ductile shear zone in Northern Guangxi, China

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The Yuanbaoshan ductile shear zone (YBDZ) is tectonically located in the southwestern part of the Jiangnan Orogen, NW Guangxi and is a key area for understanding the Paleozoic and Mesozoic tectonic evolution of the South China Block. In this study, mylonites have been collected from there for detailed metamorphic and $^{40}Ar/^{39}Ar$ geochronologic analyses in order to further evaluate its deformation features, timing and tectono-thermal history in south China.

Syn-tectonic neogenic muscovite and chlorite from the mylonites have been applied to get the metamorphic conditions based on the muscovite-chlorite geothermometer. The temperatures obtained by applying this geothermometer range between 350°C and 500°C.

Laser multi-grain stepwise heating $^{40}Ar/^{39}Ar$ daing of syn-deformation muscovite, biotite and K-feldspar from the mylonites yielded both flat plateau shape profiles and staircase increasing-shaped age spectrum. Musovite and biotite concetrates with flat age spectra yiled two mianly generation plateau ages of *ca.* 409-390 Ma and *ca.* 360 Ma, respectivley, whilst K-feldspar yield much younger plateau ages of *ca.* 300 Ma. These ages indicate that the YBDZ have been experienced multiple episodes of tectono-thermal events from the Paleozoic to Mesozoic. Additionally, biotite concetrates with staircase profile is charaterized by steadily climbing apparent ages at nitermediate temperatures and a peak-like profle at higher temperatures, giving the youngest age of *ca.*180 Ma and the oldest apparent age of *ca.* 356 Ma at the last step. Two possible interpretations can apply to explain this age spectra profle, i) a mixing of biotie generations with different ages and different ar rentivity as already reported[1-2], ii) biotites may experience Ar loss induced by thermal event at *ca.*180 Ma after cooling to its closure temperature at *ca.* 356 Ma[3].

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[1] Wijbrans *et al*. (1986) *Contributions to Mineralogy and Petrology 93, 187-194*.

[2] Villa *et al*. (2014) *Journal of Petrology 55, 803-830*

[3] Markley et al. (1998) *Tectonics 17, 407-425*