

Petrogenesis of 1.43 Ga Baoban Granitoids in Hainan Island, South China: a Western Extension of Mesoproterozoic Anorogenic Magmatic Belt in SW Laurentia?

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The 1.43 Ga Baoban granitoids outcrop over ~110 km² in the southwestern Hainan Island, South China. They intruded the Baoban gneisses and schists. The granitoids were strongly deformed and foliated. Biotite granite is the dominant rock type with a total exposed area of ~90 km², and the granodiorite makes up the remainder. The Baoban granitoids are subalkalic and weakly metaluminous to peraluminous (A/CNK value = 0.90-1.26). With extreme enrichment of iron [$\text{FeO}^{\text{T}}/(\text{FeO}^{\text{T}} + \text{MgO})$ value = 0.75-0.93] and high abundance in Ga, Rb, Ba, REE, Y, Nb and Zr, they display geochemical affinity of anorogenic A-type granites and plot mostly in the within-plate granitic field of Pearce et al. (1984). The Baoban granitoids display a very small range of the initial $\epsilon\text{Nd}(\text{T})$ values ranging from 0 to -2 and Nd model ages around 1.8-2.0 Ga, implying a derivation mostly from a relatively juvenile mafic lower crust. It is noted that the Baoban granitoids are strikingly similar in geochemistry and Nd isotopes to the 1.43 Ga Sherman granitic batholith (Frost et al., 1999) in SE Wyoming and northern Colorado (USA), southwest of the Laurentian "Mesoproterozoic anorogenic magmatic belt" (Windley, 1993). It is highly probable that the Mesoproterozoic basement of the SW Hainan Island was an extension of SW Laurentia, supporting the Rodinia configuration in which the South China was a link between Laurentia and Australia-East Antarctica (Li et al., 1995).

References

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