Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05426, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05426
EGU General Assembly 2008


# Generation of ferrosilicic magmas by near-total melting of turbiditic sediments at ultrahigh temperatures (1000-1200 ˚C): Experimental constraints and implications

**A. Castro** and A. I. Moreno-Ventas

Departamento de Geología. Universidad de Huelva. Campus del Carmen, 21071 Huelva, Spain

Peculiar magmatic rocks were erupted and emplaced at depth at the margin of the Gondwana supercontinent during the Cambro-Ordovician transition. These rocks are characterized by high contents in silica and iron but they do not have equivalents in the high-silica members of calc-alkaline series. They record geochemical signatures of turbiditic metasediments with Al saturation index, ASI $>$ 1, FeO $>$ 3.0 wt.%, MgO $>$ 1.5 wt.% for very low contents in calcium (CaO $<$ 1.5 wt.%). The results from the experimental study shown in this paper indicate that conditions of 1000 ˚C (excess water) and 1100 - 1200 ˚C (subsaturated and dry) at pressures of 1.4 to 2.0 GPa are the most plausible conditions for the generation of these ferrosilicic magmas by near-total melting ($>$ 80 vol.% melt) of turbiditic sediments. A thermal regime of this kind affecting crustal rocks can only be found at the core of mantle wedge plumes forming at the subduction channel and ascending through the hot mantle wedge.