Analysis and interpretation of microbial fossils in extreme environment of Dry Valley rocks, Antarctica

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The presence of indigenous microflora colonising the inside of Antarctic desert rocks [1] is a landmark for extreme environment microbial ecology. Some minerals in Antarctic rocks are formed by induced biomineralization and/or transformed my microbial activity [2]. These minerals are examples of inorganic biomarkers – traces left by living microorganisms due to their biological activity. However, if extensive biomobilisation of elements occurs when microorganisms are biologically active and/or after their decay, the microorganism fossil formation could be observed [3]. Careful interpretation of SEM-BSE images revealing the ultrastructural features of mineralized cells is the most important criteria for the interpretation of fossilized microorganisms. In addition, Raman spectroscopy had confirmed previous analysis obtained with EDS regarding to the composition of the mineralized cell and their mineralized environment. Thanks to Raman application in this study, the presence of jarosite filling the pore is definitively confirmed in all the analized cases.

[1] Friedmann (1992) *Science* **215**, 26: 1045-1053.
[2] Wierzchos & Ascaso (2001) *Polar Biol*. **24**, 863-868.
[3] Wierzchos & Ascaso (2002) *Int. J. of Astrobiology* **1**, 51-59.

Clinopyroxene eclogite-peridotite thermobarometry of the large Yakutian kimberlite pipes.

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Universal monoCPX barometer with (Nimis & Taylor 2000) CPX thermometers [1] reveal agreement with experiments to 100 kbar (~7 kbar) for peridotites (~10 kbar) for eclogites, with Opx estimates and new mono-garnet thermobarometry (Ashchepkov & Vishnyakova 2009). TP position of eclogites pyroxenites and diamond inclusions in mantle columns beneath the large pipes of Yakutia. Large pipes contain HT diamond bearing eclogites (Sobolev *et al.* .1996, Beard *et al.* 1996, Taylor *et al.* 2006, Shatsky *et al.* 2008) ~55-40 kbar in several clusters and more rarely TP estimates of eclogites refer to the convective branch >60 kbar. Pyroxenite TP trase LT branch, TP for ilm PXT conside with inflection in lithosphere base. TP for Cr-diopsides of diamond inclusions of metasomatic affinity mark HT branches while orthopyroxene and Cr- pyrope (G10) diamond inclusions reflect LT conditions.

Eclogites melted by the rising plume melts produced hybrid Al-Cr-Na metasomatites in Alakite, Upper Muna and Mirninsky fields. Eclogites and hibrids issign of the diamond potency as well as Cr- rich (G9-10) garnets.

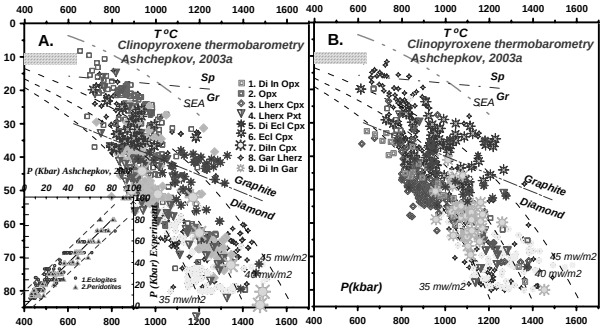

Figure 1. Mono TP estimates for eclogites, pyroxenite

[1] Ashchepkov *et al.* (2008) *Geol. Soc. London. S.P.* **293**, 335–352. [2] Sobolev *et al.* (1994) *Int. Geol.Rev.* **36**, 42-64. [3] Logvinova *et al.* (2005) *Int. Geol. Rev.*. **47**, 1223-1233.