Mineralogical and geochemical characteristics of volcanic rocks from Eskişehir, Northwest Anatolia, Turkey: Preliminary results

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Eskişehir volcanic field in the Northwest Anatolia, mainly comprised of lavas and pyroclastics, has been characterized by alkaline composition. The lavas range in composition from basanite through trachybasalt and basaltic trachyandesite to trachyandesite. The pyroclastic rocks observed as pyroclastic fall and flow (ignimbrites) deposits, and they are rhyolitic in composition. Based on mineralogical studies, lavas consist of olivine (Fo_{72-86}), clinopyroxene, plagioclase, amphibole, orthoclase, amphibole, biotite minerals, and oxides (Ti-magnetite). The basanites, different from the other lava types, have nefeline normative. Normally zoned clinopyroxene minerals are named as augite-diopside (Wo_{37-45}) based on Moritomo [1] classification. Plagioclase minerals are labradorite-bitovnite (An_{50} to An_{80}) in composition. Variation diagrams of SiO_2 with major and trace elements are consistent with fractional crystallization process. The Eskişehir lavas and ignimbrites are characterized by enrichment in LILE and LREE, relative to HFSE, and HRE elements. They show slight negative Nb, Ta, and Ti anomalies which are characteristics of the subduction and/or crustal contamination related suites. Differently, the basanites with OIB-like trace element patterns, and high Nb/La>1, high Nb/U~40 ratios, they can be evolved from a mantle source that have no subduction and crustal contamination effects.

[1] Morimoto (1989) *Can. Mineral* **27**, 143-156.

Silica deposition on cells in environmentally defined experimental solutions

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Ancient microfossils that display the highest morphological fidelity are preserved in siliceous sedimentary rocks. Experimental solutions based on silica speciation in Yellowstone hot springs were used to constrain the geochemical conditions that favour microfossil formation; experimental silicification conditions matched natural solution in that the dominant species was aqueous silica as opposed to deprotonated or polymerized forms of silica. Experimental solutions that contained *Bacillus subtilis* were sequestered from a common solution reservoir in cellulose dialysis bags. Reservoir solutions contained between 0 and 400 mg/L SiO_2 with or without dissolved Fe or Al. A statistical comparison of the length-to-width aspect ratio of cells in the controls (without silica or metals) and cells in the experiments with different concentrations of silica (no metals) showed that the morphology of treated uncollapsed cells changed throughout the experiment. Cell morphology also differed for experiments with silica and either iron or aluminum. In spite of the osmotic differences expected for treated and untreated solutions, we found that cells remained intact for the duration of the experiments with low silica concentrations (no metals). However, to retain cell shapes for the duration of experiments with higher silica concentrations required the addition of Al and Fe. Silica accumulation on cells was observed for all treated solutions, and differed when iron and aluminum were present, which suggests that silica accumulated differently on cells in the presence of metals than in their absence.