

Celadonite in continental flood basalts of the Columbia River Basalt Group

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ABSTRACT

Celadonite is a common alteration product of basalts in marine environments. It has been argued that marine fluids are necessary for celadonite formation, possibly by providing a source of K and other dissolved cations. Laterally extensive deposits of celadonite occur in basalts of the Grande Ronde Basalt of the Columbia River Basalt Group. The celadonite is found in scoriaceous flow tops of layered basalt flows, where it fills vesicles and replaces the surrounding groundmass. Evolved interstitial glasses are present in the basalts and dissolution of these glasses may provide sufficient K for celadonite formation, whereas dissolution of groundmass augite provides a source of Mg and Fe. These observations show that alteration by seawater or any other external source of dissolved ions is not necessarily required for celadonite formation.

Keywords: Celadonite, basalt alteration, Columbia River Basalts