Geochemistry of hyperalkaline spring water and precipitates from the Oman ophiolite

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Spring waters from Moho transition zone and surface waters emerging from mantle peridotites, and precipitates near the springs in the Semail Ophiolite Nappe of northern Oman were investigated to understand formation processes of the spring waters and the precipitates. The spring waters were characterized by hyperalkaline and reducing, while the surface waters were moderately alkaline and oxidizing. Most precipitates were identified with Ca-carbonates formed by mixing the spring water with low Mg/high Ca and the surface water with high bicarbonate. The above observations imply that the spring water is emerging through water-rock interaction making the solution hyperalkaline, enrich in Ca and extremely poor in Mg such as serpentinization and brucite formation accompanied by serpentinization.

Spring waters from Moho transition zone and surface waters emerging from mantle peridotites, and precipitates near the springs in the Semail Ophiolite Nappe of northern Oman were investigated to understand formation processes of the spring waters and the precipitates. From the pH and Eh measurements and chemical analyses of the waters, the spring waters were characterized by hyperalkaline and reducing, while the surface waters were moderately alkaline and oxidizing. Most precipitates were identified with Ca-carbonates which are easily formed by mixing the spring water with low Mg/high Ca and the surface water with high bicarbonate from mantle peridotites. The above observations imply that the spring water is emerging through water-rock interactions making the solution hyperalkaline, enrich in Ca and extremely poor in Mg such as serpentinization and brucite formation accompanied by serpentinization.