Experimental demonstration for blackening of pseudotachylyte

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Pseudotachylyte, basically formed by frictional melting at earthquake, sometimes shows various colors of not only black but also of greenish black and grayish black. The color might be correlated to the mineral assemblage, slip parameter, and environmental condition, but such relationship has not yet been investigated. We here demonstrated to form pseudotachylyte by using high-temperature furnace on the artificial mixture samples of quartz, albite, biotite, and chlorite. The melted product after heating the mixture of quartz and albite at 1300 °C did not show the blackening, whereas the products using the mixtures with 10 wt.% biotite and/or 10 wt.% chlorite became remarkably black. By taking consideration into the SEM-ESD data, we concluded that Fe-bearing minerals plays an important role for the color transition, especially, blackening in pseudotachylyte.

Keywords: pseudotachylyte, blackening

