Alteration of Volcanic Glasses

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Abstract

Devitrification and bioerosion of glass are two processes that alter natural volcanic glass over time. The idea of glass alteration implies that glass is not a typical solid; rather, it is a meta-stable solid. Though the theory of devitrification emerged in the 1960s and has been experimentally simulated, the bioerosion of glass by microbes is a very new theory and is yet to be well known among geologists. The purpose of this study is to research and search for a connection between the two processes, as well as to observe naturally altered glass to determine if either process occurred. Using a rock saw, horizontal lap machine, and a thin section machine, a piece of natural flow banded rhyolite glass was observed under a polarized microscope. About 50% of the sample was composed of quartz and plagioclase feldspar, while the other 50% was composed of opaque clay, which had devitrified from the glass. No evidence of microbial erosion was seen. This new aspect of science had been heavily debated by scientists in recent years because of the vital role it could play in modern science.

Keywords: glass alteration, devitrification, microbial bioerosion