

**Publication****A Novel Method to Quantify Bioavailable Elements and Mobile ATP on Rock Surfaces and Lichens****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4213923**Author(s)** Torres, Natascha T.; Steinsberger, Thomas; Droz-Georget, Helen; Muller, Beat; Brandl, Helmut; Hauser, Peter C.; Furrer, Gerhard**Author(s) at UniBasel** [Hauser, Peter C.](#) ;**Year** 2016**Title** A Novel Method to Quantify Bioavailable Elements and Mobile ATP on Rock Surfaces and Lichens**Journal** AIMS Geosciences**Volume** 2**Number** 3**Pages / Article-Number** 245-258**Keywords** capillary electrophoresis; adenosine triphosphate; rock surface; weathering; granite; lichens; Rhizocarpon geographicum

The quantification of mobile ions on rock surfaces is essential for the investigation of mineral weathering. A need for such measurements arises from the study of initial soil formation in pioneering environments, the biogeochemical weathering of monuments and buildings, and the chemical reactivity of minerals in general. In the case of mineral surfaces covered by lichens, the quantification of adenosine triphosphate (ATP) is a measure of the vitality of the organisms. To date, non-destructive investigations of rock surfaces and growth of biofilms have generally been limited to visual methods. We evaluated a new technique for the analysis of readily available ions and ATP. For this, a single drop of pure water is spread on bare mineral surfaces or rock-based crustose lichens. The solution is recollected and analyzed for dissolved ions and ATP using a portable capillary electrophoresis instrument and a luminometer, respectively. We illustrate the natural heterogeneity of available ions on freshly broken granite surfaces and the effects of subsequent wetting, freezing, and thawing. In addition, the influence of humidity and age of crustose lichens is demonstrated by ion and ATP analysis.

**Publisher** AIMS Press**ISSN/ISBN** 2471-2132**edoc-URL** <http://edoc.unibas.ch/59006/>**Full Text on edoc** Available;**Digital Object Identifier DOI** 10.3934/geosci.2016.3.245**ISI-Number** 000404164900004**Document type (ISI)** Article