

The Application of Neural Network for Mineral Classification

Cong, Cao

Department of Earth Resources and Engineering, Kyushu University

Tsuji, Takeshi

Department of Earth Resources and Engineering, Kyushu University

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The Application of Neural Network for Mineral Classification

CAO CONG*, Takeshi Tsuji

Department of Earth Resources and Engineering, Kyushu University,

*Corresponding author email: onion9298@mine.kyushu-u.ac.jp

Abstract: *People usually map mineral distribution from elemental compositional maps using electron probe microanalyzer (EPMA). However, when the elemental composition in mineral is complex and includes several chemical elements, it is difficult to determine the mineral maps using conventional methods (e.g., cross-plot of elements). In this study, we classify and figure out minerals from many elemental compositional maps through Kohonen self-organizing map (SOM). SOM is unsupervised neural network. The input data we used for training in neural network are X-ray intensities of nine elements, derived from EPMA maps. This paper fulfilled the mineral classification process in a computational way rather than experimental or visual determination. SOM map, which has been widely applied in various fields, provide us a more instant and economic way to distinguish minerals. Through this method we developed, we can automatically classify the mineral distribution of many samples.*

Keywords: mineral; classification; Kohonen self-organizing map (SOM); neural network; elemental compositional maps.