

Development of a Simple Experiment for Understanding the Ramification in the Earth Science

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We carried out a simple experiment to understand ramification that occurs in the Earth science. In the experiment, we sandwiched acrylic paint between two acrylic plates and opened the two plates. When we were opening the two plates, air flows into the spaces between the two plates and penetrates into the acrylic paint. Consequently both the paint and passage of the air describe the branched structures. In this study, we quantified the branched structures using fractal analysis and Horton's laws to evaluate the degrees of complexity and the branched patterns. As a result, the branched structures appeared similar to the ramifications in the Earth science. This experiment is an easy yet effective tool to show the process of a ramification to students.

Keywords: ramification, fractal analysis, Horton's law