

## The Thinking of Dynamic Formulation of Rock Aging Agent Driven by Data

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**Abstract :** The construction of mines, railways, highways, water conservancy projects, etc., have formed a large number of high steep slope wounds in China. Under the premise of slope stability and safety, the minimum cost, green and close to natural wound space repair, has become a new problem. Nowadays, in situ element testing and analysis, monitoring, field quantitative factor classification, and assignment evaluation will produce vast amounts of data. Data processing and analysis will inevitably differentiate the morphology, mineral composition, physicochemical properties between rock wounds, by which to dynamically match the appropriate techniques and materials for restoration. In the present research, based on the grid partition of the slope surface, tested the content of the combined oxide of rock mineral ( $\text{SiO}_2$ ,  $\text{CaO}$ ,  $\text{MgO}$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_3\text{O}_4$ , etc.), and classified and assigned values to the hardness and breakage of rock texture. The data of essential factors are interpolated and normalized in GIS, which formed the differential zoning map of slope space. According to the physical and chemical properties and spatial morphology of rocks in different zones, organic acids (plant waste fruit, fruit residue, etc.), natural mineral powder (zeolite, apatite, kaolin, etc.), water-retaining agent, and plant gum (melon powder) were mixed in different proportions to form rock aging agents. To spray the aging agent with different formulas on the slopes in different sections can affectively age the fresh rock wound, providing convenience for seed implantation, and reducing the transformation of heavy metals in the rocks. Through many practical engineering practices, a dynamic data platform of rock aging agent formula system is formed, which provides materials for the restoration of different slopes. It will also provide a guideline for the mixed-use of various natural materials to solve the complex, non-uniformity ecological restoration problem.

**Keywords :** data-driven, dynamic state, high steep slope, rock aging agent, wounds

**Conference Title :** ICCTMS 2021 : International Conference on Chemical Technologies for Materials Science

**Conference Location :** Tokyo, Japan

**Conference Dates :** August 16-17, 2021