

Symbolic dynamics and configuration of symmetry in the texture

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As seen in the previous study, we proposed the translation symmetry of the mineral banding of the metamorphic rocks (Toriumi and Fukuyama, 2008). the controlling factors of this process are mainly of fluid flux and diffusion of dissolved ions accompanied with metamorphic reactions. In additions, symbolic sequences are mostly robust against rock compositions, suggesting the stationary state of these competing processes. On the other hand, geometries of symmetry in the repeating texture are not simple but are classified into three types; banding, string, and spot. These are clearly due to spatial structures formed by dynamical system studied here. The banding means the one dimensional, the string does two dimensional, and the spot shows three dimensional pattern. The former two types appear in lower grade metamorphic rocks, and the latter one does in higher grade rocks in the Sambagawa and Alpine metamorphic belts. These should be discussed by means of symmetry nature of dynamical equations of this reaction diffusion equation.