

## Low grade graphitization of deformation in Regional metamorphism

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Graphitization in regional metamorphism is affected by various factors; thermal, pressures, time, shear stress, precursor materials, hydrothermal and catalyst(Large, 1994; Itaya,1980). Especially, it is well known that elastic deformation in graphitization is the one of the most important factors for acceleration of graphitization(Bustin,1995).

This study aims to verify how tectonic deformation influences graphitization process in the upper sequence of Hidaka metamorphic rocks (Zone1-2). The upper sequence of Hidaka Metamorphic belt is located in East side of Hidaka Mountains, Hokkaido, Japan. These metamorphic rocks are divided into metamorphic zoning from Zone1(Ms-Chl)to Zone2(Ms-Bt) by Osanai(1987) and ten stage(D0-D9) based on the nature and sequence of deformation by Koyasu(2006MS).

Degree of graphitization in deformed rocks that record elastic deformation (D2-D7 stage) was no variation, although these rocks with brittle fracturing (D8-D9 stage) compounded to low grade graphitization with bimodal distribution in Koikakusyu-satunai river route. High-grade crystalline graphite is distributed in matrix of metamorphic textures, on the other hand, low-grade crystalline graphite is distributed in vein like texture in Raman mapping.

These poorly crystalline graphite may deformed under the influence of brittle deformation process in later stage rather than in ductile deformation of peak metamorphic temperature. Moreover, these processes occurred in small crushed zones.

Bimodal distribution of graphitization in thin section scale may be common process in regional metamorphism. Relationship between deformation and graphitization will be discussed.

Keywords: Graphitization, Hidaka metamorphic belt, Micro-raman spectroscopy, XRD, HRTEM