A Study on Mineralogy of Andalusite Genesis in Yangshigou Area, West Beijing, China

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Abstract: Polarizing microscope, Fourier infrared spectroscopy and X-ray fluorescence spectroscopy were used to study the mineralogical characteristics and genesis of andalusite in area of Yangshigou in western Beijing, China. Results indicate that there are four kinds mineral assemblage of andalusites presented in the ore-bearing rocks: ① andalusite alone; ② biotite andalusite assemblage; ③ muscovite/sericite andalusite assemblage; ④garnet-andalusite assemblage, meaning that the degree of metamorphism of rocks varies from low to high. The "X"-shaped fractal and ring-shaped microstructural development of the andalusite cross section show that the crystallization of andalusite forms synchronously with structural deformation. The formation of andalusite in this area profits from exchange and reaction of alkali-rich fluids into the argillaceous rocks during the intrusion of the Fangshan magmatic rock. Andalusite forms under a low temperature(500~550 ℃) and a low pressure (<500 MPa) condition.

Keywords: Andalusite; Mineral assemblage; Genesis; Contact thermal metamorphism