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PETROLOGICAL AND GEOCHEMICAL INTERPRETATIONS OF REACTION TEXTURES IN THE GRANULITES OF BHAVANI COMPLEX, TAMIL NADU, INDIA

[*1] K. Justine Antony, [2]R.S. Kumar, [3]A.J. Aran Castro, [4]P. Rajkumar, [5]P. Poongothai
[*1, 2,3,5]*Department of Earth Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu, India.*
[4]*Advanced Facility for Microscopy and Microanalysis, Indian Institute of Science, Bangalore, India*
Email: justinekantony@gmail.com

Abstract

Bhavani Complex, part of the Palghat Cauvery Shear Zone in Southern Granulite Terrain of Peninsular India, is comprised of petrological and geochemical characters of high temperature and pressure domains manifested by distinctive reaction textures in granulitic facies rocks. The study is focused on field relation, petrological and geochemical interpretations of reaction textures in the granulite facies rocks that help to understand the mineralogical characteristics and metamorphic history of Bhavani Complex. Through detailed petrographical studies, understanding the different textures and distinct mineral assemblages, and the diffusional zones of corona textures preserved in the rock have been attempted. Similarly, geochemical signatures through mineral assemblages have been addressed in formulating these diffusive and transformative components of reactions present in the granulitic facies rocks. The granulites are mainly composed of pyroxene, garnet, feldspar, amphiboles, iron oxides and biotite. As a repository of distinctive rare reaction textures, granulites in the region are indispensable for studying the corona textures. Detailed understanding of mineral assemblages and reaction textures suggests that garnet and melanocratic minerals preserve the reliable imprints of corona textures indicated as successive phases. They unveil the corona network systems of Pl-Grt-Opx-Hbl, Cpx-Grt-Pl, Opx-Cpx-Grt-Hbl and Cpx-Hbl-Mt-Pl formed by different diffusional regime and P-T paths.

Keywords: Bhavani Complex, granulites, reaction textures,corona texture, diffusion, transformation.