

## Petrogenesis of garnet-clinopyroxene rocks from the Gondwana collisional orogeny

TAKAMURA, Yusuke<sup>1\*</sup>; TSUNOGAE, Toshiaki<sup>1</sup>; IINUMA, Minako<sup>1</sup>; KOIZUMI, Tatsuya<sup>1</sup>; SANTOSH, M.<sup>2</sup>; MALAVIARACHCHI, Sanjeeva<sup>3</sup>

<sup>1</sup>Univ. Tsukuba, <sup>2</sup>China University of Geosciences Beijing, <sup>3</sup>Univ. Peradeniya

Madagascar - Southern India - Sri Lanka - East Antarctica region, which is regarded as a part of the East African - Antarctic Orogenic Belt formed by complex subduction-accretion-continent tectonic events related to the amalgamation of Gondwana Supercontinent during Neoproterozoic, is characterized by the presence of major suture zones (e.g. Palghat-Cauvery Suture Zone in southern India) which correspond to paleo-plate boundaries formed by the closure of Mozambique Ocean at ca. 530-550 Ma. The dominant lithologies of the suture zones are felsic to intermediate orthogneiss, metasediments, and mafic-ultramafic suites. Particularly, the occurrence of mafic-ultramafic suites (ophiolite or layered intrusion) is a unique character of the suture zones compared to surrounding granulite blocks and cratons. Here, we report new petrological and geochemical data of metagabbroic garnet-clinopyroxene rocks from Sri Lanka and discuss its petrological implications. Mineral assemblages of the rocks are garnet + clinopyroxene + orthopyroxene + ilmenite + hornblende + plagioclase (type 1), and garnet + plagioclase + clinopyroxene + orthopyroxene + quartz + ilmenite (type 2). Type 2 rock shows a decompression texture of orthopyroxene + plagioclase symplectite formed by a reaction: garnet + quartz => orthopyroxene + plagioclase. Similar rocks and textures have been reported from the Palghat-Cauvery Suture Zone in South India (Nishimiya et al., 2008; Sajeew et al., 2009; Saitoh et al., 2011), Highland Complex in Sri Lanka (Osanai et al., 2006), and Lutzow-Holm Complex in East Antarctica (Saitoh et al., 2012). Temperature and pressure conditions inferred for the type-1 Sri Lankan metagabbro based on pseudosection analysis in NCFMASHTO system is 970-1040C and 8-10.5 kbar, which is significantly lower in pressure than the results of Osanai et al. (2006) (>18 kbar, >1000C). Recent petrological and geochemical studies of the Palghat-Cauvery suture zone in southern India suggest that similar metagabbros and related mafic-ultramafic suites occur as various blocks within ortho- and paragneisses as melange. Similar occurrences and P-T evolution of metagabbro bodies in several Gondwana fragments suggest that the Palghat-Cauvery Suture Zone might continue to the Lutzow-Holm Complex (East Antarctica) through Highland Complex (Sri Lanka).

Keywords: granulite, Gondwana, suture zone, pseudosection