

Igneous zircons preserving protolith age but internally deformed during the high-pressure metamorphism

*REHMAN Ur Hafiz¹

1. Department of Earth and Environmental Sciences, Graduate School of Science and Engineering, Kagoshima University

Zircon, a mineral highly resistant to alteration and secondary effect, generally serves as a robust tool to provide accurate age data of the magmatic, metamorphic or detrital origin of the rocks in which it is crystallized, recrystallized or trapped. Most of the published articles on zircon age data mainly report U-Pb age data and associate their results with the geological or tectonic events to their research areas. No doubt, most igneous rocks (plutonic and volcanic both) yield age data fairly accurate and identify the geological event of the rocks which contain those dated zircons.

However, in case of zircons formed or occurring in metamorphic rocks may not yield straight-forward age results. The reasons are (1) presence of inherited detrital or igneous-origin core domains, (2) the overgrowth domains, could be igneous or metamorphic, and (3) the outer rim or late-stage domains. Studying zircons via CL-imaging enables to distinguish such domains if present. However, those domains have been deformed or subject to U, Pb and trace element mobility is not easy to understand. Studying zircon for EBSD may be a useful tool to identify those internal deformations in single zircon crystals. In this paper an EBSD results on already dated zircons from the Himalayan HP eclogites have been presented. The age-data suggest their magmatic origin but several domains preserve internal deformation, probably occurred during the HP Himalayan eclogite facies event.

Keywords: Zircon, age, Eclogites, Internal deformation, High-pressure metamorphism