Accepted Manuscript

Fractured micro-granitoid enclaves: A stress marker

Tridib Kumar Mondal, Sankha Subhra Acharyya

PII: S0191-8141(18)30006-3

DOI: 10.1016/j.jsg.2018.05.011

Reference: SG 3652

To appear in: Journal of Structural Geology

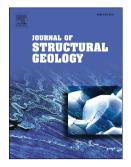
Received Date: 8 January 2018

Revised Date: 11 May 2018

Accepted Date: 13 May 2018

Please cite this article as: Mondal, T.K., Acharyya, S.S., Fractured micro-granitoid enclaves: A stress marker, *Journal of Structural Geology* (2018), doi: 10.1016/j.jsg.2018.05.011.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

1 Fractured micro-granitoid enclaves: a stress marker 2 3 4 5 6 7 8 9 Tridib Kumar Mondal¹ and Sankha Subhra Acharyya² Department of Geological Sciences, Jadavpur University, Kolkata 700032, India ¹E-mail: tridibkumarmondal@gmail.com ²E-mail: sankhaacharyya@gmail.com Phone: +91-033-2457-2553; Fax: +91-033-2457-2719 10 11 *Corresponding author: Tridib Kumar Mondal 12 13 14 15 16 Abstract: 17 Systematic, parallel, and steeply dipping tensile fractures within rounded to sub-rounded 18 micro-granitoid enclaves are analyzed to decipher the stress condition at Chitradurga granite 19 (Dharwar craton, south India). The study is performed in two steps: 1) Assessing the 20 fracturing condition through thermo-mechanical model as fractures in granite may be related 21 to thermal stresses during its cooling or to tectonics stresses. 2) Performing the plane strain 22 mechanical solution for circular rigid inclusions to fractured enclaves, where rock mechanics 23 concepts of fracturing are integrated with kinematic analysis. We interpret that the parallel, 24 systematic fractures in the micro-granitoid enclaves developed due to the stress amplification 25 inside enclaves when the host pluton was at shallow depth of ~2.4km. The derived 26 paleostress orientation fits well with the orientation and sense of movement to the adjacent 27 Chitradurga Shear Zone. The deduced paleostress conditions from fractured micro-granitoid 28 enclaves are also in a good agreement with the previously revealed regional tectonics. We 29 conclude that the fractured micro-granitoid enclaves are reliable stress indicator. 30 31 32 Keywords: Fractures; Micro-granitoid enclaves; Paleostress; Dharwar craton; India 33 34 35 1. Introduction 36 The study of fractures is central to evaluate rock strength and fluid flow in rocks. 37 (Segall et al., 1990; National Academy of Sciences, 1996; Bergbauer and Martel, 1999;

Aydin, 2000; Zhong et al., 2009; Sato et al., 2013; Mondal and Mamtani, 2013; Crider, 2015;

38

Download English Version:

https://daneshyari.com/en/article/8914367

Download Persian Version:

https://daneshyari.com/article/8914367

<u>Daneshyari.com</u>