

## **ORIGIN OF A CARBONATE-HOSTED NEOPROTEROZOIC MANGANESE FORMATION: THE PENGANGA GROUP, INDIA**

1GUTZMER, J. and 2BEUKES, N.J. GDI, WWU Muenster, Germany; 2RAU, Johannesburg, South Africa

The thin but laterally extensive stratiform manganese deposit of the Penganga Group near Adilabad in Andhra Pradesh, India, provides an unusual example of a Neoproterozoic manganese formation. The manganese formation is hosted by a succession of very weakly metamorphosed limestone and chert that were deposited in an outer shelf environment. Glacial sediments, found in close association with many other Neoproterozoic manganese and iron formations, are conspicuously lacking in the Penganga Group. The manganese ore is composed of supergene Mn oxihydroxides derived from a finely laminated and microoidal rhodochrosite and kutnahorite protore. Geochemical and petrographical evidence is provided that carbonate microoids originated immediately below the sediment-water interface during very early diagenesis. Microbially mediated suboxic diagenesis and reduction of hydrogenetically precipitated  $Mn^{4+}$ -oxihydroxides by organic carbon were instrumental in the formation of the manganese carbonate protore.