Daniel Wiemer PhD, Dipl.Geol  
CET, School of Earth Sciences, UWA

Earth’s oldest stable crust in the Pilbara craton formed by cyclic gravitational overturns – Evidence from greenstone belt to dome transect

The School of Earth Sciences is pleased to invite you to a Lecture in the SES Seminar Series given by Daniel Wiemer entitled “Earth’s oldest stable crust in the Pilbara craton formed by cyclic gravitational overturns – Evidence from greenstone belt to dome transect”.

This study focuses on how the oldest core of the Australian continent - the ‘dome-and-keel’ East Pilbara Terrane (EPT) - formed more than 3.5 billion years ago. The complex tectonic and petrologic history of ancient rocks in the studied Doolena Gap greenstone belt and adjacent Muccan dome is unveiled using a multifaceted methodology of field-based structural geology, geochronology, geochemistry, and petrology. The study demonstrates the presence of an early ‘rock cycle’, providing insights into the geodynamics of early Earth: ~3.6 billion-year-old felsic proto-crust formed from a mafic precursor and was emplaced into the crust and exhumed during gravitationally-driven overturn until ~3.4 billion years ago. Integrating previous data from other Archaean terranes, a model of early crustal stabilization is proposed, in which successive gravitational overturns follow 100-million-year cycles. Progressive dome-and-keel development is linked to crustal stabilization and the onset of Wilson-Cycle plate tectonic processes ~3.2-3.0 billion years ago.

Daniel Wiemer is a crustal researcher, who applies petrology, geochemistry, geochronology, and field-based structural geology. He received his M.Sc. at the University of Kiel, studying the crustal evolution of the Archaean Western Dharwar Craton, South India. For his contribution on the tectonic evolution of the early Archaean Doolena Gap greenstone belt, East Pilbara Terrane, WA, Daniel was awarded a Ph.D. at the Queensland University of Technology. In mid-2017, he joined the Centre for Exploration Targeting, under Prof. Steffen Hagemann, to develop a tectonic model for gold mineralization in the Carboniferous Pataz region, Peru. Daniel is frequently involved in teaching of undergraduate students.

VENUE                   Robert Street Building Lecture Theatre (G.16), Ground Floor Robert Street Building  
University of Western Australia, 35 Stirling Hwy, Crawley 6009

TIME  
4:00 - 4:45pm Thursday 5 April, 2018

You are invited to join us afterwards for refreshments provided for sale by our local SEG Student Chapter in the Resource Room, Robert Street Building.