



IPRCC 2017 国际学术讲座

Precambrian Lithospheric Tectonics and Modeling

主办单位：中国国际前寒武研究中心（IPRCC）

北京离子探针中心（国家科技资源共享服务平台）

时 间：2017 年 10 月 27 日-29 日

地 点：中国地质科学院新综合楼三楼 X304-X308 大会议室（地科院食堂楼上）

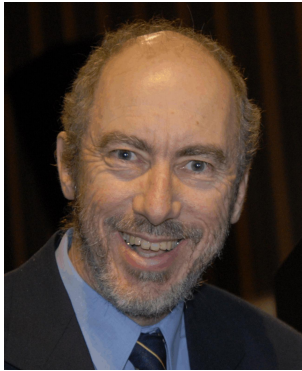
地 址：北京市西城区百万庄大街 26 号

主 讲 人：Peter Cawood 教授、Alan G Jones 教授、Craig O' Neill 博士

Course Overview

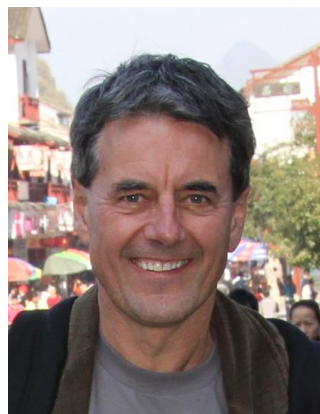
The continental lithosphere is the archive of Earth history, not only of the exposed crust but through the rock record of the atmosphere, hydrosphere, and biosphere, and of the mantle through its interactions with the crust. An understanding of the evolution of the lithosphere is fundamental to resolving questions on the origin of life, the evolution and oxygenation of our atmosphere, past climates, mass extinctions, the thermal evolution of Earth, and the interactions between the surficial and deep Earth. The evolution of plate tectonics on Earth has had fundamental effects of the evolution of the surface environment, and life. However, there is little consensus on the style of tectonics in operation on the early Earth, and how it has changed through time. This course will address when and how the continental lithosphere was generated, when plate tectonics may have begun, the volume of continental lithosphere through Earth history, and whether it provides a representative record of Earth processes. Furthermore, geophysical modelling of the thermo-chemical structure of the mantle in a petrologically internally-consistent manner will emphasize that modelling one data type on its own is of very limited value and can lead to highly erroneous conclusions about the physical parameters of the Earth's mantle. Students should bring their laptop computers in order to perform take-home computational components.

Introduction of Lecturers



Peter Cawood 教授 澳大利亚莫纳什大学

Peter Cawood is a field geologist whose research is concerned with the evolution of mountain belts and the insight they provide into Earth processes. He undertook his undergraduate and graduate studies at the University of Sydney, followed by post-doctoral and faculty positions in New Zealand, Canada, Scotland and Australia. He is current an Australian Research Council Laureate Fellow at Monash University. His research contributions include: the role and timing of initiation of plate tectonics in the early Earth and continental crust generation; innovative studies on how the supercontinent cycle has biased the rock record; a new model for the deformation and stabilization of convergent plate margins and relations to collisional mountain building; and the application of microanalytical techniques to unravel the provenance history and palaeogeography of sedimentary basins and orogenic belts. He has undertaken several leadership roles including Head of Departments in Australia and the UK, Director of the John de Laeter Centre of Excellence in Mass Spectrometry, Director of the Australian Research Council funded Special Research Centre in Tectonics, and chaired the Earth Sciences panel of NERC, UK, for the last three years. He is a past President of the Geological Society of Australia, and he has received the Carey Medal from the Geological Society of Australia and the Mawson Medal from the Australian Academy of Sciences. He was elected a Fellow of the Royal Society of Edinburgh in 2012.



Alan G Jones 教授 爱尔兰都柏林高级研究所

Alan G Jones, a Manchester (Mancunian) lad and a Manchester United supporter for life, took Physics as a first degree at the University of Nottingham, UK, from 1969 to 1972. At the end of those 3 years he decided to go into geophysics and did the 1st year MSc in Applied Geophysics (1972-73) at the University of Birmingham. His MSc thesis project was on developing a Monte-Carlos inversion code for DC resistivity, which he called CRASH as it kept doing so. He then undertook a four-year PhD in Geophysics at the University of Edinburgh (1973-77) in magneto-tellurics during the Dark Ages. One aspect of his PhD work was in developing a Monte-Carlos inversion code for MT data.

Subsequently lured by German beer, Jones went to Münster University for almost four years (1977-1981) where he studied induction in Scandinavia. A short stint at the Geological Survey of Sweden rounded out 1981, after which he moved to the University of Toronto for two years (1982-83). An unexpected job offer from the Earth Physics Branch took him to Ottawa in 1984. Becoming Section Head of the group in 1987 was Jones's first taste of management, and a stint as Acting Director in 1989 of the Continental Geoscience Division cured him of any managerial aspirations. Jones was very fortunate to be in Canada during the tremendous heydays of the Lithoprobe programme, and he led the EM aspects on most of the transects. In a post-Lithoprobe world, Jones found the GSC to be too limiting, and eventually he managed to escape in 2004 to Ireland, where he became head of geophysics at the Dublin Institute for Advanced Studies (DIAS), a research institute modelled on Einstein's Princeton Institute for Advanced Studies. Jones lasted 11 years at DIAS undertaking studies on 3 continents including the largest academic MT study to date in southern Africa (SAMTEX), before the call of Canada brought him home in 2015.

Jones is the most published (185 papers) and most cited (over 10,000 citations, h-index of 53) scientist in magnetotellurics. He is co-author on the definitive textbook on the subject – The Magnetotelluric

Method: Theory and Practice – published by Cambridge University Press. He is currently Senior Professor Emeritus at the Dublin Institute for Advanced Studies, a Specially-Appointed Professor at the China University of Geosciences Beijing, and Adjunct Professor at Macquarie University (Sydney, Australia) and the University of Western Australia (Perth, Australia). In addition, with former students and a colleague, he has formed an MT consulting company – Complete MT Solutions.



Craig O' Neill 博士 澳大利亚麦考瑞大学行星研究中心

Craig O'Neill is an Australian geodynamicist with an interest in the early Earth. He obtained his BSc and PhD degrees at the University of Sydney, interspersed with a short stint in exploration geology in western New South Wales. Following his PhD, he worked as a post-doc at Rice University, Houston, in 2005 and Macquarie University in 2006, where he was appointed as a lecturer in 2007. Craig's expertise is in modelling the global mantle and tectonic system and understanding the drivers behind plate tectonics and how they have varied through time. His research has led to him being awarded an ARC Future Fellow (2011-2014), an ARC Postdoctoral Research Fellow (2007-2010), the NSW Tall Poppy Science Award (2007), and The Australian newspaper's Young Australian Scientist of the Year (2006). He is currently

Director of the Macquarie Planetary Research Centre, a member of the Australian Academy of Science's National Committee of Earth Sciences, and senior editor at Cogent Geoscience.