

Marian Tredoux

Associate Professor of Geology, Faculty of Natural and Agricultural Sciences, University of the Free State, Republic of South Africa

4-lecture series at the Earth Sciences Dept., Sapienza Univ. of Rome
22-23 May, 2018

The economic geology of the Kaapvaal craton: an overview

Introduction

In this course, the most important economic deposits in South Africa will be presented in a geo-time related context, from the Archean to the Phanerozoic Eons. The archeological finds of the last 2 million years will also be briefly touch upon. For the various ores, the following information will be discussed: geological setting, mining method(s) and environmental impact.

Course outline:

22 May, 2018. Aula Lucchesi, 10-12

Lecture 1: The global geological context of the Kaapvaal craton

- 1.1 Description of the Kaapvaal craton
- 1.2 The southern giant mantle swell and its consequences
- 1.3 The geology of the craton in broad brush strokes

Lecture 2: Archean ores

- 2.1 Au in the Barberton greenstone terrane
- 2.2 Sb in the Murchison greenstone terrane
- 2.3 Au and U of the Witwatersrand basin
- 2.4 Archeological spin-off: gold ore 'finger-printing' and Iron Age trade routes

23 May, 2018. Aula Lucchesi, 10-12

Lecture 3: Proterozoic ores

- 3.1 The Bushveld complex: platinum-group elements (PGE), Cr, V
- 3.2 Cu-Pb-Zn ores of
 - 3.2.1 Phalaborwa
 - 3.2.2 Namaqualand
- 3.3 Fe ores of the giant mid-Proterozoic banded iron formations

Lecture 4: Phanerozoic ores

- 4.1 Coal and U deposits of the Karoo basin
- 4.2 Diamond deposits
 - 4.2.1 Kimberlite related (primary)
 - 4.2.2 Alluvial (secondary)
- 4.3 The 'Cradle of humankind': early hominin archaeology