

# Mineralogy and cryptic layering of the Kunene anorthosite complex of SW Angola and Namibia

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## Abstract

The gabbro-anorthosite complex of SW Angola and Namibia (Kunene Complex) is dominated by anorthosite-troctolite cumulates. Other broadly gabbroic rock types are subordinate. An-rich plagioclase (max.  $An_{62}$ ) and Fo-rich olivine (max.  $Fo_{74}$ ) are common in the western area of the complex with plagioclase becoming gradually less anorthitic (min.  $An_{45}$ ) and olivine less forsteritic (min.  $Fo_{62}$ ) toward the east. This cryptic change is more pronounced in the northern half of the complex where rocks are darker, fresh, and the rhythmic layering is also more conspicuous. Within the white 'massive' anorthosite type, which is largely restricted to the southern half of the intrusion, cryptic layering is less pronounced. Textures indicate that rocks cooled very slowly and the co-existing mineral compositions indicate re-equilibration to usually low temperatures.

**KEYWORDS:** layering, layered anorthosite, 'massive' anorthosite, Kunene, Angola, Namibia.

## Introduction

The exposed portion of the Kunene Complex of Angola and Namibia (Fig. 1) is the middle part of a layered igneous body equivalent to the Main Zone of the Bushveld Complex. Anorthosite and troctolite are the dominant lithologies although other gabbroic rocks do occur (Silva, 1988). Layering is more evident in the northern half of the intrusion where rocks are usually fresh and dark coloured. Cryptic variation is evident in the composition of both plagioclase ( $An_{62-45}$ ) and olivine ( $Fo_{74-58}$ ), the two principal mineral phases occurring in the complex. There is a systematic variation of the chemistry and mineralogy of the rocks from west to east indicating that the top of the intrusion is to the east.

The 'white' anorthosite which occurs in the southern portion of the body is lighter in colour, and 'massive' in appearance. It was also studied by Kostlin (1967), in Namibia.

Analytical data presented in this paper were obtained during research performed towards a PhD. dissertation at the University of Lisbon, Portugal.

## Sampling and stratigraphy

This investigation was carried out on samples collected in 1964, by E. Loureiro, E. S. W. Simpson and C. A. M. Alves, covering the entire

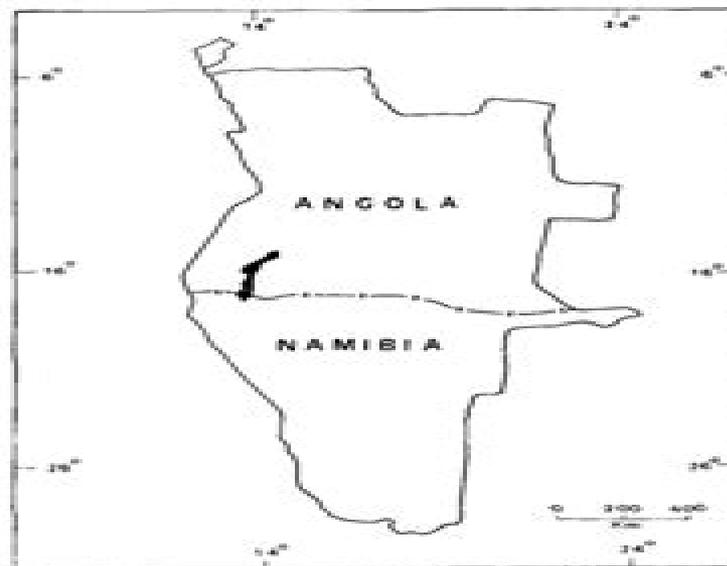


FIG. 1. Location map of the Kunene Complex.

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## **Table of Contents Type Mineralogy Of Namibia**

1. Understanding the eBook Type Mineralogy Of Namibia
  - The Rise of Digital Reading Type Mineralogy Of Namibia
  - Advantages of eBooks Over Traditional Books
2. Identifying Type Mineralogy Of Namibia
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Type Mineralogy Of Namibia
  - User-Friendly Interface
4. Exploring eBook Recommendations from Type Mineralogy Of Namibia
  - Personalized Recommendations
  - Type Mineralogy Of Namibia User Reviews and Ratings
  - Type Mineralogy Of Namibia and Bestseller Lists
5. Accessing Type Mineralogy Of Namibia Free and Paid eBooks
  - Type Mineralogy Of Namibia Public Domain eBooks
  - Type Mineralogy Of Namibia eBook Subscription Services
  - Type Mineralogy Of Namibia Budget-Friendly Options
6. Navigating Type Mineralogy Of Namibia eBook Formats

- ePub, PDF, MOBI, and More
  - Type Mineralogy Of Namibia Compatibility with Devices
  - Type Mineralogy Of Namibia Enhanced eBook Features
7. Enhancing Your Reading Experience
    - Adjustable Fonts and Text Sizes of Type Mineralogy Of Namibia
    - Highlighting and Note-Taking Type Mineralogy Of Namibia
    - Interactive Elements Type Mineralogy Of Namibia
  8. Staying Engaged with Type Mineralogy Of Namibia
    - Joining Online Reading Communities
    - Participating in Virtual Book Clubs
    - Following Authors and Publishers Type Mineralogy Of Namibia
  9. Balancing eBooks and Physical Books Type Mineralogy Of Namibia
    - Benefits of a Digital Library
    - Creating a Diverse Reading Collection Type Mineralogy Of Namibia
  10. Overcoming Reading Challenges
    - Dealing with Digital Eye Strain
    - Minimizing Distractions
    - Managing Screen Time
  11. Cultivating a Reading Routine Type Mineralogy Of Namibia
    - Setting Reading Goals Type Mineralogy Of Namibia
    - Carving Out Dedicated Reading Time
  12. Sourcing Reliable Information of Type Mineralogy Of Namibia
    - Fact-Checking eBook Content of Type Mineralogy Of Namibia
    - Distinguishing Credible Sources
  13. Promoting Lifelong Learning
    - Utilizing eBooks for Skill Development
    - Exploring Educational eBooks
  14. Embracing eBook Trends
    - Integration of Multimedia Elements
    - Interactive and Gamified eBooks

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