

FLOTATION CHEMISTRY FUNDAMENTALS AND PRACTICE COURSE

INSTRUCTOR: PhD Eng. LIZA FORBES

Date: October 09 - 12, 2023

Schedule: 6:00 p.m. to 10:00 p.m.(peruvian time)

COURSE OBJECTIVES

- Explain the fundamental principles underpinning flotation chemistry in a way that is accessible and relevant to metallurgists in industry
- Provide guidance to understanding your ore body and how it will impact the choice of reagents, with particular focus on:
 - Sulphide minerals
 - Oxide minerals
- Outline the available options for flotation reagents and explain how they work
- Cement knowledge with the use of real-life case studies
- Briefly go over reagent testing methods

COURSE OUTLINE

1. INTRODUCTION

2. OBJETIVES

3. UNDERSTANDING SURFACE FORCES

3.1 Surface forces

3.2 DVLO theory and the force balance

3.3 Energy barrier and turbulent forces

4. UNDERSTANDING YOUR ORE SYSTEM

4.1 Identifying key ore components

4.2 Identifying key mineral surface characteristics

5. UNDERSTANDING REAGENTS

5.1 Depressants

- Basic function and mechanism

- Chemical building blocks

5.2 Collectors

- Basic function and mechanism

- Chemical building blocks

6. SULPHIDE MINERALS

6.1 Understanding surface properties

- Surface speciation

- Electrochemistry

- Galvanic Interactions

6.2 MANIPULATING SURFACE PROPERTIES

- Grinding environment control
- pH control
- Eh control
- Polymeric depressants
- Selective collectors
- Activators
- Cyanide
- Ligno-sulphonates
- Other reagents

7. OXIDE MINERALS

7.1 Understanding surface properties

- Mineral surface charge
- Anisotropic minerals

7.2 Manipulating surface properties

- pH control
- Anionic and cationic collectors
- Sulfphidisation
- Polymeric depressants
- Dispersants

8. FROTHERS

8.1 Functions and mechanism

8.2 Coalescence

8.3 Froth formation

8.4 Chemical building blocks

8.5 Collector/frother interactions

9. SELECTING YOUR REAGENT SUITE

10. MORE ON TESTING YOUR REAGENT SUITE

11. CASE STUDIES – INDUSTRIAL REAGENT TRIALS

12. RECOMMENDED READING

I N S T R U C T O R



BSc.Eng, PhD Eng. LIZA FORBES

A/Prof Liza Forbes specialises in mineral flotation, with specific focus on flotation reagent chemistry, mineral surface chemistry and base-metal sulphide electrochemistry. Her main interest lies in integrating fundamental and applied aspects of flotation research, to develop new and improved processing technologies.

Liza graduated with a PhD in Chemical Engineering from the University of Cape Town in 2007. Since then, she has worked at the N.B.Keevil Mining Institute, University of British Columbia; the Department of Chemical and Biomolecular Engineering, University of Melbourne; and CSIRO Mineral Resources.

Liza has previously worked at a metallurgist at the Bafokeng Rasimone Platinum Mine, Anglo Platinum in South Africa. She has since been involved with a number of industry research projects with companies such as Kennecott Copper Co, Zijin Mining, Newmont, Newcrest, Sytec Technology Solutions and Anglo Coal.

INVESTMENT: USD 1,500

INCLUDES:

- 16 hours of live classes with world-class expert - Zoom platform
- Simultaneous Interpretation English - Spanish - English
- Digital materials (slides, exercise templates, additional material, etc.)
- Access to the platform for 10 days
- Certificate of participation issued by International Metallurgical Consultants S.A.C.

Payment Method

- Bank transfers (commissions are not included)
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- Western Union (request data)
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- **Account Number in Dollars :**
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- **SWIFT code :**
BCPLPEPL
- **Inter- bankcode:**
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