MASTER OF ECONOMIC GEOLOGY SHORT COURSE

Ores in Magmatic Arcs - Indonesia
8 – 19 March 2019

Pre-field trip workshop (optional for CODES Masters students)
4 – 6 March 2019
Venue: Gadjah Mada University, Yogyakarta, Indonesia
With the growing importance of the western Pacific region for mineral exploration, mining and ore forming processes there is a pressing need for relevant training on research and exploration skills applicable to ores formed in magmatic arc environments.

Previously, comprehensive field-based training in this subject area was only available in the USA. To address the need for similar training in a west Pacific context, focusing on the specific geological, tectonic and environmental characteristics of this region, CODES is proud to offer a two-week field-based short course, *Ores in Magmatic Arcs - Indonesia*.

This short course has a strong focus on field observations and hands-on practical skills, supported by an understanding of theoretical aspects. The full spectrum of deposits (e.g., porphyry, high sulfidation, low sulfidation) developed in magmatic arc settings will be covered. The short course presenters have detailed knowledge of the areas and deposits visited, and are uniquely equipped to deliver the skills and insights needed by participants.

Course fees include all accommodation and field transport, entry fees (Mt Ijen), course notes, field guide, and breakfasts and lunches. Travel to and from Indonesia, dinners and alcohol, are not included in the course fee and are the responsibility of each participant. A valid passport is required for entry into Indonesia.

**COURSE PRESENTERS**

**David Cooke** is Professor of Geochemistry, Director of the ARC Industrial Transformation Research Hub: Transforming the Mining Value Chain (TMVC), and Director of CODES. He has extensive research expertise in hydrothermal fluid chemistry and ore-forming systems, specialising in porphyry and epithermal deposits.

**Adi Maryono** is currently VP Exploration at J Resources with over 27 years experience in Au-Cu exploration with BHP, Newmont, Intrepid Mines, Buena, and J Resources. He was part of the discovery teams at Reko Diq in Pakistan, Elang and Tujuh Bukit/Tumpangpitu in Indonesia, and several smaller gold deposits in Indonesia and Australia. Adi is also a senior adjunct researcher at CODES, University of Tasmania Australia (UTAS), and regularly leads field trips in Indonesia for SEG, IAGI-MGEI, and CODES-UTAS.

**Noel White** is currently a professor at Hefei University of Technology in China and an adjunct professor at CODES (UTAS) and James Cook University, Townsville. Noel has worked in the minerals industry for over 40 years, in exploration operations, project generation, research and management for both big and small companies. He consults on a variety of deposit types to exploration companies worldwide, but his research focus is mostly on epithermal and porphyry deposits.

**Lejun Zhang** is a research fellow in the CODES and TMVC Research Hub, UTAS specialising in the application of alteration mineral chemistry for enhancing exploration in lithocap and green rock environments, and vectoring using SWIR and whole-rock geochemical data.

**Rachel Harrison** is an exploration geologist focusing on porphyry and epithermal Au-Cu exploration. The Rachel has been based in Indonesia for the past nine years, and was involved in the discovery of the Tumpangpitu porphyry deposit at Tujuh Bukit. She has recently finished her PhD thesis at CODES, and now works as an independent consultant geologist on projects in Indonesia and abroad.

**Iryanto Rompo** is a field-based geologist with over 14 years experience in exploration of epithermal Au-Ag, porphyry Cu-Au, VHMS and skarn deposits. He has worked as an exploration geologist, exploration manager and consultant geologist in Indonesia, Malaysia and Australia. His experience includes over seven years exploring in the lithocap environment on the island of Lombok, Indonesia.

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**Ores in Magmatic Arcs** is offered as a unit in the national Minerals Geoscience Masters program.
PRELIMINARY PROGRAM

LEADERS: DAVID COOKE (CODES), LEIJUN ZHANG (CODES), RACHEL HARRISON (CODES), IRYANTO ROMPO (J-Resources)
INVITED PRESENTERS: ADI MARYONO (J-Resources), NOEL WHITE (CODES)

Thursday March 7
Arrival in Lombok, Indonesia

Friday March 8
Student presentations (optional for industry participants)
Welcome and logistics meeting (all Participants)

Saturday March 9
Introductory lectures:

Sunday March 10
Travel to Batu Hijau in Sumbawa
Batu Hijau open pit tour
Anaconda mapping exercise in Batu Hijau Pit
Review drill core from Batu Hijau

Monday March 11
Review drill core from Elang porphyry deposit
Smelting tour
Travel back to Lombok

Tuesday March 12
Pangulu and Gunung Prabu lithocap and porphyry stockwork exposures, Lombok
Anaconda outcrop mapping

Wednesday March 13
Sundancer lithocap - A transect of a complete lithocap profile from barren to mineralized HSE ledges and underlying porphyry Cu-Au prospect
Brambang porphyry Cu-Au prospect (drillcore)

Thursday March 14
HSE mineralization at Pelangan/Mencanggah
Porphyry mineralization at Selodong

Friday March 15
Fly to Banyuwangi via Surabaya, drive to Jiwa Java Resort
Start at 2am, hike (2 hours) to Mt Ijen Peak and Crater Lake 2,148 m
Descend to active fumaroles, view “blue fire” from the fumaroles before sunrise
Observe exposures along the track of advanced argillic alteration and charcoal fragments

Saturday March 16
Drive to Tujuh Bukit
Visit Pulau Merah porphyry island before sunset

Sunday March 17
Tujuh Bukit: Open pit and core

Monday March 18
Tujuh Bukit: Breccias
Farewell BBQ

Tuesday March 19
We will take everyone to the Banyuwangi airport in the morning or afternoon to connect with their domestic flights from Banyuwangi
REGISTRATION FORM
Ores in Magmatic Arcs
8—19 March 2019

PERSONAL DETAILS
Title—Please highlight (Prof / Dr / Mr / Mrs / Ms / Miss)
First Name: ............................................................ Last Name: (surname / family name): ............................................................
Preferred Name (for use on name tag): ............................................................
Position: ............................................................................................
Company / University: ............................................................................................
Address: ............................................................................................
City: ................................. State: ................................. Postcode: ................................. Country: ............................................................
Phone (work): ................................. Phone (home): ................................. Phone (mobile / cell): ............................................................
Email: ............................................................................................
Dietary requirements / allergies / other health issues: ............................................................
Next of kin (name, relationship and email/phone contact): ............................................................

REGISTRATION FEES
All fees are in Australia dollars (AUD). Please indicate ☑

MGM Masters Students:
Total registration fee $4,000 (Excludes airfares and UTAS tuition fee)
☐ Deposit (GST free): $1500.00
☐ Balance (GST free): $2500.00

Industry Participants:
Total course fee $6,000 (Excludes airfares)
☐ Deposit (GST free): $1500.00
☐ Balance (GST free): $4500.00

Other Students:
Total course fee $4,000 (Excludes airfares)
☐ Deposit (GST free): $1500.00
☐ Balance (GST free): $2500.00

PAYMENT
Registrations are due by 5th of January, 2019. Deposit payments are due on the 15th of January, 2019 (please note: payments cannot be received until 2019). Full payment must be received by 15th of February, 2019.

Preferred payment method. Please indicate ☑

☐ Credit Card

Upon receipt of your registration from you will be provided with a payment reference number and web address for online payments. Please note: Credit card details cannot be accepted by email.

☐ Cheque or Bank Draft

Please make cheques and bank drafts payable to “The University of Tasmania”. Bank drafts must be made out in Australian currency (AUD).

☐ UTAS Purchase (for students with internal accounts only)

UTAS account number: ............................................................

☐ Invoice

Name, address and email address for person responsible for payment of invoice: ............................................................

Please retain a copy of this form from your records and email or post original to Dr Robert Scott (contact details above).
Pre-field trip workshop
(optional for CODES Masters students)

Dates: 4 – 6 March 2019
Venue: Gadjah Mada University, Yogyakarta, Indonesia

Speakers: David Cooke; Adi Maryono; Noel White; Terence Hoschke; Lejun Zhang; Rachel Harrison; Iryanto Rompo; Other invited speakers

Preliminary program

Day 1  Porphyry deposits
- Introduction to porphyry deposits
- SW Pacific porphyry deposits
- Alkaline porphyry deposits
- Leached caps and supergene enrichment

Day 2  Lithocap and epithermal deposits
- Introduction to lithocaps
- HS, IS and LS deposits
- Porphyry-epithermal system-related breccias

Day 3  Exploring porphyry and epithermal deposits
- Exploration strategies
- Geophysical signatures for porphyry-epithermal deposits
- SWIR techniques
- New exploration tools: magmatic and alteration mineral chemistry
- Tour to Borobudur, BBQ dinner and Javanese dancing

This workshop is for graduate students and professionals in industry and academia who want to improve their understanding of geology, geochemistry and genesis of porphyry-epithermal deposits. The course will provide a comprehensive overview of the geology, geochemistry, mineralogy, alteration and exploration approaches for porphyry-epithermal deposits.
REGISTRATION FORM

Pre-field trip workshop *(optional for CODES Masters students)*

4 – 6 March 2019

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Address: ................................................................................................................................................................................................................................................................

City: .............................................................. State: ......................... Postcode: ....................... Country: .................................................................

Phone (work): ............................................ Fax: ........................................

Phone (home): ............................................ Phone (mobile / cell): .................................................................

Email: ..................................................................................................................................................................................................................................................

Dietary requirements / allergies / other health issues: .................................................................

Next of kin (name and contact details): ............................................................................................

REGISTRATION FEES

All fees are in Australia dollars (AUD). Please indicate ☑

**CODES Master Students:**

☐ Total registration fee $200 (GST free, excludes airfares and accommodation)

**Other Students:**

☐ Total registration fee $800 (GST free, Excludes airfares and accommodation)

**Other Participants:**

☐ Total registration fee $1,200 (GST free, excludes airfares and accommodation)

PAYMENT

Registrations are due by 30th of January, 2019

Preferred payment method. Please indicate ☑

☐ Credit Card

Upon receipt of your registration from you will be provided with a payment reference number and web address for online payments. Please note: Credit card details cannot be accepted by email.

☐ Invoice

Name, address and email address for person responsible for payment of invoice: ...........................................................................................................................

☐ Bank transfer

NAME: UGM Yogyakarta Indonesia
BANK: BNI
BANK ACCOUNT: #0200398615
SWIFT CODE: BNINIDJAUGM

Please retain a copy of this form from your records and email or post or fax original to:

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