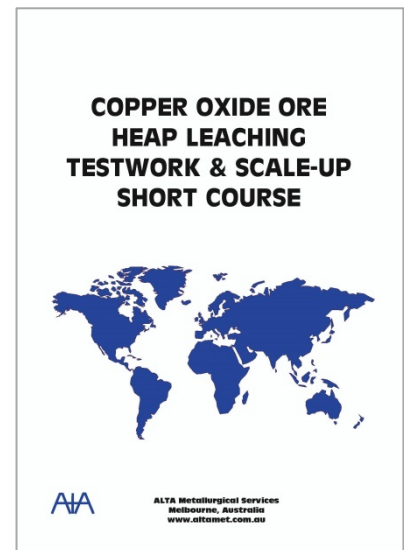
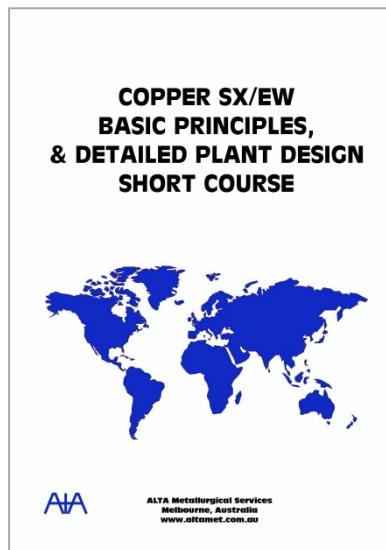
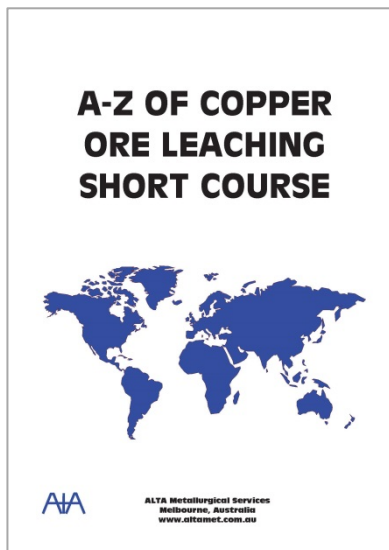




Copper Hydromet Short Courses

Melbourne, Australia, November 2013



The short courses will be presented by **Alan Taylor**, Managing Director, ALTA Metallurgical Services, based in Melbourne, Australia. Alan draws from his **extensive experience** gained in 40+ years with major engineering firms and as an independent consultant. He has worked on a wide variety of projects from the late 60s through to the present time - a period which has seen the introduction of many new technical developments. Alan's detailed experience and CV is available at www.altamet.com.au.

The courses are practically-oriented and are a valuable introduction for newcomers and a useful refresher for old hands. Each course is presented over one full day and course outlines are attached as page 2.

Please submit the completed registration form to alantaylor@altamet.com.au (attached as page 3).

The registration fee includes one hardcopy of the short course manual, morning tea, lunch and afternoon refreshments. Participants will also receive an electronic copy of the manual after the workshop.

The 2013 Copper Hydromet Short Courses will be held at ALTA, located at Level 13, 200 Queen Street, Melbourne, Australia.

Copper Hydromet Course Dates

Topic	Date
A-Z of Copper Ore Leaching	Wednesday, 20 November 2013 9:00am – 4:30pm
Copper SX-EW Basic Principles and Detailed Plant Design	Thursday, 21 November 2013 9:00am – 4:30pm
Copper Oxide Ore Heap Leaching Testwork and Scale-up	Friday, 22 November 2013 9:00am – 4:30pm



Copper Hydromet Short Courses

Course Outlines

Course Outline: A-Z of Copper Ore Leaching 20 November 2013

Part A: Leachability of minerals, review of commercial processes, developments and trends:

- Leachability of copper minerals and importance of gangue minerals
- Chemistry of oxide and sulphide copper minerals
- Commercially applied leaching processes
- Process outline, history and status
- Developments and trends

Part B: Leaching of copper sulphide concentrates:

- Background
- Processes applied commercially
- Processes operated at demonstration plant scale
- Processes operated at pilot plant scale
- Other process developments
- Trends
- Postscript

Part C: Agitated leaching of oxide ores:

- Background
- Typical Commercial Operations
- Typical Flowsheets
- Testwork, Scale-up and Equipment Sizing
- Design Criteria
- Layout
- Industry Trends

Part D: Heap Leaching:

- Background
- Typical Commercial Operations
- Typical Flowsheets
- Testwork, Scale-up and Equipment Sizing
- Design Criteria
- Layout
- Industry Trends

Course Outline: Copper SX/EW Basic Principles and Detailed Plant Design 21 November 2013

- Reference Sources
- Basic Process
- Key SX functions
- Reasons for Growth
- Alternative Processes
- Organic Liquids in SX
- Typical Flowsheets
- SX Contractors
- SX Ancillary Facilities
- EW Materials Handling

- EW Ancillary Facilities
- Plant Arrangement and Layout
- SX Fire Protection
- Materials of Constructions
- Testwork
- Scale-Up and Design Criteria
- Plant Operation
- Performance and Risk
- Industry Trends
- Example Plant Design

Course Outline: Copper Oxide Ore Heap Leaching Testwork and Scale-Up 22 November 2013

- Identification and characterisation of potential ore types.
- Guidelines for analysis of drill samples.
- Guidelines for preparation of samples.
- Requirements for mineralogical analyses.
- Required head analyses.
- Required multi-element chemical analysis.
- Analysis of typical samples from potential process water sources.
- Outline procedure for bottle roll leach tests.

- Outline procedure for impurity build-up sequential leach tests.
- Outline procedure for open circuit mini-column leach tests.
- Outline procedure for closed circuit column tests with SX.
- Outline procedure for tall column close circuit tests with SX.
- Physical tests for crushing characteristics.
- Test data interpretation and scale-up.
- Development of process flowsheet.
- Development of input for preliminary economic evaluation.
- Identification and analysis of risks.



Copper Hydromet Short Courses

Registration Form

VENUE

ALTA Metallurgical Services' office, conveniently located in the Melbourne CBD at Level 13, 200 Queen Street. There are a number of reasonably priced hotels within a short walk of the office - suggestions can be provided on request.

PARTICIPANT

Please complete a separate form for each participant.

Mr / Ms / Dr / Prof	First Name	Surname
Preferred Name (for name badge)		
Company:		Title/Position
Postal Address:		
City/Town:		State/Province:
Postcode:		Country:
Office Phone:	Mobile Phone:	Fax:
Email:		
Special Requirements (e.g. dietary, mobility):		

SHORT COURSES	A-Z of Copper Ore Leaching 20 November 2014	Copper SX/EW Basic Principles and Detailed Plant Design 21 November 2014	Copper Oxide Ore Heap Leaching Testwork and Scale-Up 22 November 2014	Fees
1 course (daily rate)	<input type="checkbox"/> \$750	<input type="checkbox"/> \$750	<input type="checkbox"/> \$750	\$
2 courses (daily rate)	<input type="checkbox"/> \$700	<input type="checkbox"/> \$700	<input type="checkbox"/> \$700	\$
3 courses (daily rate)	<input type="checkbox"/> \$650	<input type="checkbox"/> \$650	<input type="checkbox"/> \$650	\$
3+ delegates (per person)*	<input type="checkbox"/> \$650	<input type="checkbox"/> \$650	<input type="checkbox"/> \$650	\$
Full-Time Student	<input type="checkbox"/> \$200	<input type="checkbox"/> \$200	<input type="checkbox"/> \$200	\$

* For three or more delegates attending from the same organisation, the course fee will be \$650 per person, per day.

TERMS AND CONDITIONS

- Prices are in Australian Dollars (AUD) and are inclusive of 10% Goods and Services Tax (GST).
- Each participant must complete a separate registration form.
- The fee includes one hardcopy short course manual, morning tea, lunch and afternoon refreshments.
- Cancellations received prior to 31 October will be refunded in full. Cancellations received after 31 October will attract 75% refund.
- In the unlikely event of cancellation by ALTA, the only liability of the organiser is to refund all the monies paid.

PAYMENT

<input type="checkbox"/> BANK TRANSFER (Details provided on request)				
<input type="checkbox"/> CHEQUE Payable to ALTA Metallurgical Services (Australia Only)			<input type="checkbox"/> BANK CHEQUE	
<input type="checkbox"/> CREDIT CARD	<input type="checkbox"/> Visa	<input type="checkbox"/> Mastercard	<input type="checkbox"/> Diners Club	<input type="checkbox"/> American Express
Card Number:			Expiry Date:	
Cardholders Full Name:				
Signature:			Date:	

REGISTER

Please return with payment to: Alan Taylor, **ALTA Metallurgical Services**
alantaylor@altamet.com.au