‘From Mine to Market’

MP & EM Conference

View of the Chairman: Account from MP&EM Board Chair, Tony Francis

The major technical activity of the Board during the year was the highly successful Conference “Minerals and Metals from Mine to Market” held at Trinity Hall, Cambridge over December 15 -16, the Conference was dedicated to Professor Derek Fray of Cambridge. This was organised by the Conference section of IOM3 under the direction of the Conference Chairman, Dr R Vasant Kumar, Trinity Hall personnel and other members of the MP&EM Board. The Conference was fully subscribed and attended by 79 delegates from all over the world. Sponsorship was provided by SGS Mineral Services UK Ltd and Zeiss Optical.

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There were 38 papers of outstanding quality presented by leaders in the field and 10 poster displays. The event was opened and closed by Tony Francis, MP&EM Board Chair. The Conference dinner speeches included an address by Tim Sambrook of SGS, appreciations of the work of Professor Fray and his response. It is intended to publish selected papers in a future edition of the Minerals Processing & Extractive Metallurgy, Transactions of the Institutions of Mining and Metallurgy, Section C and in the International Journal of Minerals Processing. The Conference was reported in the technical press and will be in the February 2016 edition of Materials World. The Conference continues the impetus generated from Geometallurgy 2014 and is part of the strategy to establish the Board as a successful organiser of high quality technical events.

It is planned to arrange a conference in 2016 at 297 Euston Road, to provide a forum for the disciplines covered by Minerals Processing and Extractive Metallurgy. The Board intends to organise a second Geometallurgy Conference in 2017 following on from the success of Geometallurgy 2014.

- Tony Francis
(A detailed account of the conference proceedings can be found on page 3)
IOM3 Conference Review

Written By Barry Wills, Mei Online (www.min-eng.com). Photos provided by Barry Wills.

On 15th to 16th December, I was in Cambridge for the ‘Minerals and Metals Production from Mine to Market’ Conference, organised by the Institute of Materials, Minerals and Mining (IOM3) and sponsored by SGS Mineral Services and Carl Zeiss. MEI and International Mining were media partners.

The 2-day conference was dedicated to the University of Cambridge's Professor Derek Fray to mark his lifetime contributions to, and achievements in, minerals processing and extractive metallurgy.

The conference was opened on Tuesday 15th morning by Tony Francis, of Francis Minerals Consulting Ltd, UK, the Chairman of the Organising Committee, and Vasant Kumar of the University of Cambridge, who welcomed the 80 delegates from 18 countries to the historic Trinity Hall, founded in the 14th century, and boasting Prof. Stephen Hawking amongst its illustrious alumni.

Appropriately Derek Fray presented the first keynote lecture at the conference, giving examples of technology transfer in metallurgy and materials science. There is an increasing encouragement for Universities to transfer their knowledge to existing companies or to create spin-out companies. However, he stressed that it is important for academics to be aware that they really have to let go of the project, or at least share it, as most academics do not have the time nor all the skills necessary to make the project a commercial success.

Frances Perry of IOM3 asked an interesting question, as to whether the IMMAGE Database is a 20th century anachronism or a 21st century research tool. IMMAGE (Information on Mining, Metallurgy and Geological Exploration) has for more than three decades provided subscribers and IMM/IOM3 members with focused access to the world-wide literature on mineral deposits, mining, mineral processing and extractive metallurgy. She asked, and I am sure that she would like views on this, whether now that the full text of so many periodicals and conference papers is

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Derek Barratt of DJB Consultants had travelled from Vancouver just to attend this meeting. I last saw him at the SAG '15 conference, and following Dave Meadows' presentation he gave a paper giving some reasons why large tonnage SAG circuits do not meet initial production targets.

What should have been a 75 minute lunch break, giving delegates time to network, turned out to be a rushed 30 minute break, due to certain authors feeling that 15 minutes was nowhere near adequate enough for their presentations. Nevertheless IOM3 must be commended on an excellent light lunch in a superb setting.

Following lunch, the second keynote of the day was given by Barrie Johnson. Barrie leads an renowned biotechnology team at Bangor University, which has 5 papers already submitted to next year's Biohydromet '16 conference in Falmouth. He discussed the current status and future prospects for extracting and recovering metals from mineral ores and waste by biotechnology, which is at present a niche technology. However, Barrie described some of the more recent innovations in mineral biotechnologies, some potentially controversial, that offer the opportunities for using microbiological-based approaches in future mining and metal recycling operations, and which will have smaller carbon and energy demands and land area footprints than conventional metal mining. A lot to look forward to in Falmouth in June 2016!

Barrie's keynote was "my talk of the day" tweeted Anita Parbhakar-Fox, who had travelled all the way from the University of Tasmania to present her paper on the microanalytical characterisation of historic mine waste rock,
tailings, gossan waste and slag materials to assist in determining whether there are economic benefits in reprocessing such materials using modern metallurgical practices.

The Sidney Sussex College provided another wonderful venue, for the Tuesday evening conference dinner, good food and company again honouring Prof. Derek Fray.

David Goldburn of sponsor SGS Services, based at the Wheal Jane mine site (posting of 31 August) opened the day with a keynote discussing the importance of understanding ore mineralogy and mineral texture from a metallurgical perspective. He highlighted the importance of a geometallurgical approach where deposits are considered in terms of their impact and feasibility from both the macro and micro scale, set within the context of downstream processing.

Ben Tordoff of sponsor Carl Zeiss also stressed that minerals, not elements, control processing behaviour, therefore early and appropriate characterisation in the mining lifecycle will add significant value to an operation. Automated Mineralogy is one of the primary tools used in such work. Process Mineralogy '17 sponsors Zeiss and Redruth-based Petrolab have a very strong association, as Petrolab recently acquired a Zeiss Mineralogic Mining automated mineralogy system (posting of 10th September). Petrolab Director James Strongman presented a paper this morning, co-authored with colleague Jake Harrison and Ben Tordoff of Zeiss, on a method for profiling magnetic and gravity response of metalliferous ore using Mineralogic Mining data.

The majority of the Cornish contingent had links to the Camborne School of Mines, represented by Prof. Hylke Glass, a member of the conference organising committee, and his student Luke Palmer, who presented a paper on the ore characterisation of perlite for process optimisation.

Mari Lundstöm of Aalto University, Finland presented an interesting afternoon keynote on the role of chlorination in cyanide free gold leaching. Currently all gold ore leaching plants, excluding one thiosulphate plant, operate in cyanide media. Due to environmental and health and safety issues related to the use of cyanide there is currently intensive research into alternative lixiviants such as chloride, chlorine gas being used for gold oxidation in the 19th century, until cyanide took over in the 1900s. Mari described a study into the possible use of chlorination pre-treatment for preg-robbing prevention in gold chloride leaching.

Rare earth elements are increasingly in demand globally for both critical and strategic use in most high-tech gadgets, wind-turbines, hybrid vehicles etc. but their separation into pure forms is technologically challenging. In the penultimate presentation of the conference, Dhruva Singh, of Bhabha Atomic research Centre, India discussed these challenges, including the recovery of REEs from diverse resources including the recycling of e-wastes.

- Barry Wills
Shared Experiences: Consulting

Mike Cave gives his account of what he’s learnt since starting up on his own and the advantages of having your own business

Just after my 60th birthday I suddenly thought “Why keep working 9 to 5?” I did give it a little more thought before putting my notice in. The main consideration was that we would have enough to live on until my company pension started at 65. 10 years later I have never regretted that decision. I have enjoyed a decade as my own boss, managed the administration side myself and had some interesting projects. I haven’t earned as much as I did in full time employment but as my charge out rate was double my hourly pay with my previous employer, I worked far fewer hours.

Here are some tips if you are considering becoming a self employed consultant:

We all have an area of specialisation, mine is smelting, but I have found that a surprising amount of work has only a tentative association with main stream technology. As a Consultant you can be asked to look at weird and wonderful concepts that conventional Contractors are reluctant to touch. I find ‘One Mine’ essential for immediate access to a full range of technical papers. I go through TMS costing under £80 pa. IOM3 is negotiating to be included.

Nearly all my work has come through the contacts I made while working. I do have a website (www.mikecavepyro.co.uk) which I set up myself using software available from the host Freeola. It costs about £50 pa but has in fact brought in a few enquiries, although I haven’t spent a lot of time on it. Publishing papers would probably have generated more interest.

There is a bit of administration involved, but I would rather do this myself than hand over to an accountant. Close to £1,000 a year for someone else to do what I could do myself didn’t make sense. By keeping my overheads low, periods of no work just give me more time for fell walking!

Setting up a Company is easy, there are plenty of companies on the internet that will do it for under £40, all you need is to choose a unique Company name and to provide directors’ details. Usually two directors, there are advantages to having your spouse as a Director. The share capital, say £1,000, can be split to give your spouse a larger share of the dividends to avoid higher rate tax. I used my home address, there is no liability for business rates for a normal consultancy business (see http://www.2010.voa.gov.uk). You have to submit an annual return costing £13 over the internet, just listing the directors and the type of Company. You can register with Companies House and obtain an access code which will be posted to the registered Company address. After the year end of your Company you have to prepare your accounts and submit them online to HMRC. This will also provide them to Companies House. The tricky bit is getting the accounts to balance, there is no shame in putting in a small fudge factor! And watch out for rounding errors, the accounts are in whole pounds.

You must register for VAT if your turnover is over £82k but there are advantages even if your turnover is lower, mine is! The Companies you work for will have no resistance to paying VAT. You can claim (and backdate) VAT on all your business related purchases.

Or you can charge out at the full rate and pay at a lower rate.

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Just make sure you choose the correct rate or a VAT inspection could land you with a big bill for unpaid VAT. VAT returns are every 3 months and are on a “cash” basis, meaning invoices are accounted for when the money is received, not when invoiced!

Keeping accounts is simple once the Excel spreadsheet is set up. I use, Income, Expenditure, (both with a separate column for VAT), PAYE (earnings including tax & national insurance), VAT, Dividends, bank account and cash account. Use the cash account to transfer at the end of the month: earnings, dividends, and costs that I have paid myself such as phone bills etc. In fact I pay everything myself and charge my company through the Expenditure sheet. Having a company credit card just adds complexity. File all receipts and number them for reference in the spreadsheet. VAT is totalled every month and transferred to the VAT sheet every 3 months when you submit your VAT return. Use a standard proforma for the invoice copied from a commercial source. You can copy a contract too, but usually Consultants are on the receiving end. Delete the “we’ll pay you when we get paid” clause! Some Companies will demand that you have Professional Indemnity Insurance. Most overseas independent Consultants have this as a matter of course, though I have found that many in the UK don’t.

My Caunce O’Hara policy costs under £200 p.a. Could IoM3 negotiate a members deal? HMRC provide the software to calculate your tax and national insurance, which can also be paid online with a debit card. Even if you are over retirement age your Company will start paying National Insurance if you pay yourself much more than £650 pm so pay dividends instead.

Remember they are paid out net, but when determining your total earnings tax credit at 10% is added, which could push you into the 40% tax bracket. Your bank will provide a separate business bank account which will enable you to keep your personal and company money separate.

Feel free to email me with specific queries mikecavepyro@gmail.com. Or send comments to the editor. The internet is a wonderful tool but there is no-one to turn to when problems arise. Just try ringing HMRC! So let’s use the newsletter to share experience.

- Mike Cave
News from the chair of the MP&EM board, Tony Francis

• The M&EM Board met for the first of the scheduled 3 meetings per year on 28 January 2016 at the new London offices of IOM3, 297 Euston Road, NW1 3AQ. Members visiting London are recommended to drop in and take advantage of the facilities available and have a tour of the building, you will be impressed.

• This was preceded by the IMMa group meeting who had organised a presentation by the Rt. Hon Claire Short in her capacity as Chair of EITI, the Extractive Industry Transparency Initiative. Ms Short gave an extremely interesting and balanced talk elucidating the difficulty EITI has in representing equitably the interests of the Mining Companies, Countries, pressure groups and most importantly those people directly affected by the development. This event will be reported in a future edition of Materials World.

• The annual report has been submitted to the Industry and Technology Policy Board and will be uploaded to the MP&EM web site later in the year for members to read. The Board's previous annual reports are available from the web site.—www.iom3.org/mineral-processing-extractive-metallurgy-division.

• The Board is organising an event at 297 Euston Road, "Emerging Trends in Minerals Engineering" later this year. The IOM3 Conference team will be setting up a Conference web site shortly. Presentations and sponsorship will be welcome.
We’d like to hear from you...

We’re always interested to hear from our members. If there’s a topic of interest, an event or an experience you’d like to share, then we’d like to hear from you! Please contact our Editor, Emma Hosking:

E.Hosking@hotmail.co.uk

How do I join?

Individual membership of the MP&EM Division is achieved by joining the Institute of Materials, Minerals and Mining. You can join IOM3 online at www.iom3.org/join to get immediate access to member benefits, or you can complete our printed membership application form. For details of membership grades and professional qualifications visit: www.iom3.org/membership

Company membership: More information about Industry Affiliate membership and an application form are available at www.iom3.org/ias

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