



ALTA 2016 Refractory Gold Forum Panel Discussion

May 2016

Panel Chair: John O'Callaghan (JOC), Newcrest Mining, Australia

Panel Participants: Yeonuk Choi (YC), Barrick Gold, Canada; Mikko Ruonala (MR), Outotec, Finland; Mark Aylmore (MA), Curtin University, Australia; Ilia Fomenko (IF), SRC Hydrometallurgy, Russia; Paul Breuer (PB), CSIRO Mineral Resources, Australia

A wide-ranging discussion was held involving contributions from delegates as well as panel members. While the main focus was on refractory gold metallurgy, the topics discussed covered all aspects of gold production. Some of the key points included:

- YC commented that S:Au and Impurity: Au ratios are increasing with time, resulting in greater challenges (and opportunities) in the future.
- JOC commented that at Newcrest the corporate metallurgical group are targeting <\$US 500/oz production from each of the Operations, which will require much innovative thinking.
- The industry is faced with more refractory ore (relative to free-milling ores), refractory ore quality issues and a tough cost environment. While the gold industry is making some money right now, it clearly has many challenges in the future.
- Panel and delegates agreed that innovation was a key component of meeting these challenges. An interesting comment from the audience was that innovation is not just required for the metallurgy area, but for the entire business – a very relevant comment
- There was a strong emphasis on mine-to-mill and a closer understanding of the work done by geologists and mining engineers was thought very important to drive costs down. Understanding the ENTIRE production chain including the role of mineralogy very important. Too often sites/businesses have too much of a “silo” mentality.
- JOC commented on the number of young researchers and professional who presented in the preceding Refractory Gold Forum and encouraged them to “think outside the box” to make true innovations and not be constrained by the past.
- PB lamented on the lack of true collaborative research and encouraged the industry to participate more.

- JOC commented that applying innovative technologies for treating the primary sulphide product is of course appropriate, but is it possible to apply equally innovative technologies to recover gold from waste streams, say flotation tailings, where mining, crushing and grinding costs are already sunk.
- JOC made the comment that Pox batch experiments will often give different results to continuous operation – a general comment just reinforcing a comment made by YC in an earlier question session. In JOC's experience only Ni HPAL batch testing gets close to full scale continuous batch leaching results, and even then cannot be relied upon for final design
- Some comments were made on recycling and how important it will be going forward. Still unclear.
- One question from floor about using internet more. Could companies "post" details of difficult ores and invite solutions from academia. JOC commented that it may be possible but lawyers normally got in the way of that free-flowing type of work.

The topic for ALTA 2017 Gold-PM Forum and Panel is Cyanide Alternatives/Alleviation, which will be held 25-26 May in Perth, Australia.

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For more information, see *ALTA 2016 Gold-PM Proceedings* available from [Publications](#)

MetBytes are metallurgical commentary and insights written by Alan Taylor who has 40+ years' experience in the metallurgical, mineral and chemical processing industries. He has worked in metallurgical consulting, project development, engineering/construction, plant operations, plant start-up and technology development. Projects and studies have involved copper, gold/silver, nickel/cobalt, uranium, base metals, phosphates and alumina.

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