Journal Comment

The papers in this issue of the *Journal* are selected from the Heavy Minerals Conference held at Sun City from 16–18 August 2016. This conference, which has been held every two years since 1997, is the main technically focused conference covering the heavy minerals industry. The venue moves between various countries where heavy minerals processing is important. The 2016 conference, the 10th in the series, was attended by representatives from 17 countries covering all the major continents.

The three keynote speakers were John Elder from Hatch Africa, Mike Rossouw from the Department of Energy, and Dr Victor Hugo from Iluka Resources. Twenty-five papers were presented covering a wide range of topics from exploration and mining through mineral beneficiation, smelting, and downstream processing.

Performance of, and improvements to, mineral processing equipment was covered by J. Grobler, C. Ramotsabi, W. Slabbert, and H. Baloyi. Topics around the chlorination of titanium feedstocks were presented by H. Kotze, S. Hockaday, and A. Kale. Pyrometallurgy was discussed in papers by D. Zeelie, K. Bisaka, and A. Bhalla.

Heavy minerals from different parts of the world were covered by C. Concalves (Brazil), V. Subramanian (India), L. Boshoff (Madagascar), K. Eden (Alaska), and E. Akon (Bangladesh).

Health and safety issues, which have become increasingly important in the minerals industry were discussed in the paper by Keven Harlow, who presented on a topic that is assuming greater prominence in the minerals industry, namely the impact of international regulations. The paper focused on two aspects – regulations governing the handling of radioactive materials, which are relevant to the processing and sale of zircon, with zircon being classed as a naturally occurring radioactive material, and recent changes to the International Maritime Organization code for transport of bulk materials. The Zircon Industries Association was introduced as a forum for all aspects related to zircon.

Amit Bhalla presented a paper on the solid-state reduction of ilmenite with carbon. The intention of the work was to develop a process to reduce the iron content of ilmenite so as to present a higher titanium feedstock to the smelting process. Optimum particle sizes and temperatures are quoted to achieve an 80% reduction. The metallic particles produced in this process were very small, but suitable as feed to a leaching process. With the demand for higher grade feedstocks, such work is significant for deposits which contain lower grades of ilmenite.

Dr Karsten Eden presented data on the heavy mineral deposits of the Icy Cape region in Alaska. The paper discussed the history of the deposits and some more recent studies that showed the presence of the usual heavy mineral assemblages in addition to gold. The deposits have previously been worked for gold. Data was presented on the heavy mineral compositions and contents. As the deposits in the traditional mining areas become exhausted, such new deposits will become more important, and smaller quantities of very valuable by-products will be significant in the economics of such projects.

Lysandra Boshoff presented a paper on the geotechnical properties of the Mandena deposit in Madagascar. This deposit is characterized by being particularly hard due to the biological cement between the sand grains. The work reported on the development of a three-dimensional geotechnical model of the deposit to allow the throughput of the dredge mining system to be optimized. The level of cementation in this deposit is unusual in the industry, so without such important management tools the viability of such operations can be adversely affected.

Jac Grobler discussed some of the important variables that control the performance of a spiral separator. The paper looked at the impact of variations in the non-economic minerals in the feed to the unit. Spiral separators have been used for many years in the heavy minerals industry, but often the fundamental science behind their operation has been neglected. Such contributions enhance the understanding of one of our most commonly used tools.

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J. Selby