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Further development of a chemistry proxy for geometallurgical modelling at the Mogalakwena Mine

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The Mogalakwena Platinum Mine is Anglo American Platinum's flagship open cast operation and has been the focus of numerous optimisation studies. The initial outcomes of a geometallurgical program were reported on in 2013 and this paper further describes the development of a geochemical proxy to identify different ore types at the operation and link these with various metallurgical parameters.

In this case the mining operation submits all blast hole samples for chemistry by XRF prior to blasting. This is done to stockpile and treat the ore types according to grade. If it is possible to use chemistry as an indication or rock type and establish a link between rock type and metallurgical characteristics then chemistry can be used as a direct indicator (or proxy) of metallurgical behaviour (ore type) - Fig 1.

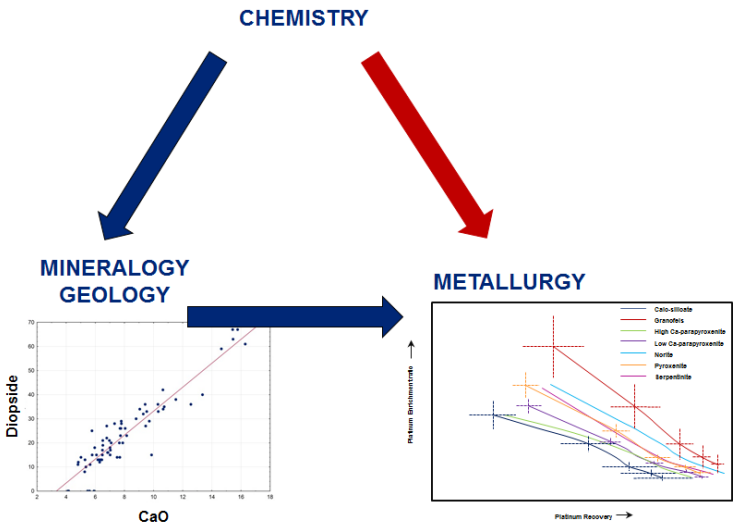

Figure 1: The link between chemistry, mineralogy (rock type) and metallurgy (ore type).

This paper demonstrates that it would be possible to use the chemical data to stockpile and process ores according to ore type (rock type and grade), with preliminary results indicating that the metallurgical characteristics are linked to rock composition which defines rock types. This investigation formed part of the geometallurgical program at Mogalakwena.

The final objective of the program focusses on risk mitigation with improved production forecasts and full implementation of the principles of geometallurgy resulting in the optimisation in metallurgical treatment adding value to the bottom line.