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Investigation of the joint comminution and leaching process for a gold ore: an attainable region approach

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2016

http://hdl.handle.net/10539/22446

Hlabangana, Nkosikhona (2016) Investigation of the joint comminution and leaching process for a gold ore: an attainable region approach, University of the Witwatersrand, Johannesburg, <http://hdl.handle.net/10539/22446>

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THE HEAD OF SCHOOL

SCHOOL OF CHEMICAL AND METURLUGICAL ENGINEERING

UNIVERSITY OF THE WITWATERSRAND

JOHANNESBURG

SOUTH AFRICA

12-09-2016

Dear Sir,

CORRECTIONS OF PhD THESIS FOR FINAL SUBMISSION BY NKOSIKHONA HLABANGANA NUMBER 537153

Please find the corrections made on my PhD thesis for your approval to enable me make the final submission of my PhD thesis to the Faculty of Engineering and Built Engineering. The corrections made on the thesis has also been checked and approved by my Supervisors Prof. Diane Hildebrandt, Prof. David Glasser and Dr Murray Bwalya

The following are the corrections made and also my reactions to comments based on the examiners demands:

EXAMINER

GENERAL COMMENTS-CORRECTIONS AND RESPONSES:

1. The color used for all figures and the tables should change since they are not visible in my copy.

Response: Color printing has been used in order to make the diagrams clear.

2. A few formatting issues:
    - 2.1.2.2. should be on a new page

Response: section 2.1.2.2 moved to the next page

    - Equations in Chapter 3 are numbered between bracket and not in Chapter 7

Response: Chapter 7 equation have been numbered between square brackets

3. Chapter 7 does not have a summary in comparison to other chapters (e.g. Chapter 5)

Response: The 4th Chapter has a summary of the Experimental test work whilst Chapter 5, 6 and 7 were written in an article format. A conclusion for these chapters was included at end of each chapter to give a summary of test-work done and results obtained.

4. Figure 5.1 of DEM simulations need to be improved

Response: A high resolution image has been used to show DEM Simulations

5. Leaching tests still do not show an overall gold balance in order to reconcile data

Response: Table C1 in appendix shows that after 60 minutes of milling, the total amount of gold extracted after leaching mass fraction M1 to M6 ~ 8.9 g/t. The average head grade is 10.3 g/t. This shows that the amount of gold locked or not liberated = 10.3 - 8.9 = 1.4 g/t

6. Attempt should be made to substitute the milling time by the specific energy consumption in kWh/t (future work).

   Response: Future work to explore the amount of gold extracted in terms leaching time and amount specific energy consumption in kWh/t.

7. Milling and leaching were conducted separately in your test work program. Leaching in milling has shown recently some good results in specific cases. This should be reported and investigated further.

Response:

We concur with the reviewer that it will interesting to look at simultaneous milling and leaching for this particular ore. Future work will look at the idea.

Thank you very much, Sir.

Yours sincerely

Mr Nkosikhona Hlabangana

Ref. No. 537153