

# Discussion: Rheological measurements on pulps from South African gold mines

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The following discussion relates to the paper by G. S. Hansford, C. D. Levy, and J. W. de Kock that appeared in the March 1976 issue of the *Journal* (vol. 76, no. 8, pp. 363-369). Dr Cloete submitted his discussion in July 1976, and it was hoped to publish it together with the authors' reply. As no reply has been received, the discussion is being published alone.

My first point relates to the finding of Hansford *et al.* that the typical goldmine pulps investigated were shear-thinning. This is contradicted, *inter alia*, by the work of Clarke<sup>1</sup>, who showed that the *apparent* shear-thinning behaviour was due to slippage on the smooth surface of the rotating bob. He went on to show that slurries of quartz of comparable size range were in fact shear-thickening (dilatant) if the viscometer was slightly modified and recalibrated.

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I would like to quote the following conclusion from a review by two of my past colleagues<sup>2</sup> that is generally available:

'Wide- or infinite-gap rotational viscometers (e.g. Brookfield Synchroelectric), while relatively inexpensive and superficially suitable for suspensions, should *not* be used for other than (at best) purely qualitative measurements, owing to sizeable errors due to uncertain flow patterns, wall and end effects, and difficulties in deriving basic flow curves from the data'.

I put forward this conclusion in contrast to the endorsement by Hansford *et al.* of the rotating-bob viscometer for rheological measurements on mine pulps.

## References

1. CLARKE. *Trans. Instn. Chem. Engrs*, vol. 45, 1967, pp. T251-T256.
2. SKUBNICK and PETERS. Rheology of non-Newtonian fluids. *CSIR Review O/CHEM* 6, Jun. 1972.

## Competition for student members

Each year the South African Institute of Mining and Metallurgy offers a prize (or prizes should the entries warrant it) of up to R100 for the best paper or dissertation on a topic appropriate to the interests of the Institute. The competition is open to all Student Members of the Institute.

A Student Member who is in fulltime study at a

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Entries for 1977 should reach the Institute by 31st December, 1977.

## Engineering in South West Africa

The SWA Engineering Profession Steering Committee was established on 4th April, 1977, its purpose being to formulate an Act covering the engineering profession in South West Africa. This Act is to be presented to the Interim Government so that it can become law when full independence comes.

The following terms of reference were laid down:

(a) to draft legislation for a South West African Act for Professional Engineers, including the formation of a South West African Institution of Engineers,

- (b) to present the draft legislation to the Interim Government,
- (c) to liaise and co-operate with para-engineering institutes if so required,
- (d) to liaise with other professions regarding the formulation and presentation of the draft legislation,
- (e) to report back to all professional engineers in the territory (of South West Africa), as well as the founding institutes.