第11回国際選鉱会議

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国際選鉱会議 (IMPC, International Mineral Processing Congress) はこのところ2年に1回程度の割合で、共産圏を含む世界各地で開催されているが、この第11回会議が去る6月21~26日、イタリアのカグリアリ (Cagliari) 市で行なわれた。カグリアリは地中海に浮ぶサルジニア島の南端にある町で、この島がイタリアとしては比較的鉱産資源の豊かな地域であるところから、カグリアリの大学には鉱山学関係の教室が設置されている。今回は IMPC の国際委員会の委員を勤めているカグリアリ大学の Carta 教授を組織委員長として会議の準備がなされた。会議の参加者数を787名であった。

会議は英・独・仏・露の四か国語にイタリア語を加えた5か国語を公用語とし、同時通訳つきで行なわれた。多数の応募論文の中から53論文が採択され、またこのほかに土地柄を反映して、とくに低品位リン鉱石の選択に関するセミナーも行なわれ、ここでは23篇の論文が取り上げられた。不採択となった論文の中から、さらに24篇の論文が Special Volume として集成され、参加者に配布された。

会議は11のセッションに分かれているが、分科会形式ではなく、シリーズに行なわれた。そのうち、3つのセッションは浮選 (浮遊選鉱) にあてられており、粉碎、分級などの単位操作がセッションであった。粉碎速度論と鉱石の単体分離 (liberation) の解析とを結びつけた研究が2篇発表され、とくに印象的であった。終りに発表論文のリストを紹介しておく。

CONGRESS PAPERS

Comminution and agglomeration-Session I

1. S. Baumgardt, B. Buss, P. May and H. Schubert : On the comparison of results in single grain crushing under different kinds of load.
2. H. J. Steiner : Liberation kinetics in grinding operation.

3. J. R. G. Andrews and T. S. Mika : Comminution of a heterogeneous material : development of a model for liberation phenomena.
4. G. Huyet : Mathematical model of wet grinding of ores.
5. T. Olsen and S. R. Krogh : A low order model of continuous ball mill grinding.
6. H. J. Roorda, O. Burghardt, H. A. Kortmann, M. S. Jipping and T. Kater : Organic binders for iron-ore agglomeration.

Classification, thickening and gravity separation-Session II

7. G. Ferrara and U. Preti : A contribution to screening kinetics.
8. H. Kirchberg, E. Töpfer and W. Scheibe : The effect of suspension properties on separating efficiency of mechanical classifiers.
9. A. J. Lynch and T. C. Rao : Modelling and scale-up of hydrocyclone classifiers.
10. M. Clement and J. Bonjer : Investigation on mineral surfaces for improving the dewatering of slimes with polymer flocculants.
11. L. A. Adorjan : A theory of sediment compression.
12. N. N. Vinogradov, V. N. Schochin, N. G. Holodov, R. J. Rots and J. S. Mamykin : Research on the separation kinetics of gravity processing in mineral suspensions.

Flotation-Session III

13. C. Du Rietz : Chemisorption of collectors in flotation.
14. K. Mushiake, T. Imaizumi and T. Inoue : Thinning and rupture of liquid film on polarized mercury. An experimental approach to the theory of flotation.
15. J. Lekki and J. Laskowski : A new concept of

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frothing in flotation systems and general classification of flotation frothers.

16. E. N. Zevgolits and S. R. B. Cooke : Electrochemical properties of the semiconductor mineral chalcopyrite.
17. H. Hoberg and F. U. Schneider : Investigations into the improvement of floatability of minerals by means of radiation.
18. V. I. Revniytsev and N. F. Olofiniski : Use of structural defects in the lattice of minerals having identical properties for their separation by beneficiation methods.

Flotation-Session IV

19. V. J. Haynman : Fundamental model of flotation kinetics.
20. V. A. Glembotsky, A. A. Mamakov, A. M. Romanov and N. E. Nenno : Selective separation of fine mineral slimes by the method of electric flotation.
21. S. Chander and D. W. Fuerstenau : On the floatability of sulfide minerals with thiol collectors: the chalcocite-diethyldithiophosphate system.

Flotation-Session V

22. T. Kubota, M. Yoshida, S. Hashimoto and J. Simoiizaka : A new method for copper-lead separation by raising the pulp temperature of the bulk float.
23. A. Pomianowski, J. Szczypa, G. W. Poling and J. Leja : Influence of iron content in sphalerite-marmatite on copper ion activation in flotation.
24. L. Evrard and J. De Cuyper : Flotation of copper-cobalt oxide ores with alkylhydroxamates.
25. S. Mukai and T. Wakamatsu : Copper silicate mineral flotation by activation with organic copper-avid reagents.
26. P. Auge, A. Bahr and H. Köser : Selective depression of silicates in scheelite flotation with fatty acids.

Electric and magnetic separation-Session VI

27. E. Laurila : A high intensity separator with permanent magnets.

28. H. E. Cohen and J. A. Good : Principles, design and performance of a superconducting magnet system for mineral separation in magnetic fields of high intensity.
29. J. H. P. Watson, N. O. Clark and W. Windle : A superconducting magnetic separator and its application in improving ceramic raw materials.

Chemical and biological processes-Session VII

30. M. C. kuhn and N. Arbiter : Physical and chemical separations via the Arbiter process.
31. C. R. Orofino Pinto and R. C. Villas Bôas : Direct leaching of chromite ores.
32. A. K. Haines, W. M. Craig, A. Faure, A. R. Hendriksz, W. J. Wills and D. I. Nicol : The use of weak-base resins in the recovery of uranium from unclarified leach liquors.
33. S.I. Pol'kin, G.I. Karavaiko, A.S. Chernyak and V. V. Panin : Theory and practice of the utilization of microorganisms in the treatment of complex ores and concentrates.
34. P. Stirkov, N. Semkov, P. Nestorova, G. Merazchiev, M. Michailov and P. Popov : Technological and economic aspects of the bacterial and chemical leaching of waste ores and refractory-to-dress copper ores in the People's Republic of Bulgaria.
35. S. Gaidarjiev, S. Groudev and F. Genchev : Direct mechanism of bacterial oxidation of sulphide minerals.

Control and testing-Session VIII

36. M. P. Jones and G. Barbery : The size distributions and shapes of minerals in multiphase material : practical determination and in mineral process design and control.
37. W. Maczka, K. Sztaba and T. Tumidajski : Regressive model of actual process of ore beneficiation and its application for building sampling scheme and control algorithm.
38. P. Degoul and J. C. Marchand : Automation, control, strategy and optimization in ore processing.
39. V. S. Protsuto, J. V. Reutsky and V. F. Lebedkin : Development and introduction of an

automated process control system at the Zyrianovsk lead complex concentrator.

Process design, plant management and practice-Session IX

40. O. S. Bogdanov, O. P. Bondarenko, J. A. Dolotova, E.J. Tishenko and Sh. V. Akhvlediani : Characteristic of flotation and magnetic separation of manganese minerals and technological improvements of their recovery from low-grade beneficiation products.
41. M. Carta, G.B. Alfano, C. Del Fà, M. Ghiani, P. Massacci and F. Satta : Investigation on beneficiation of ultrafine fluorite from Latium.
42. M. A. Eigeles, V.P. Kuznetsov, M.L. Volova, Yu. F. Sokolov, E. I. Lyubimova and A. N. Grebnev : Principles of theory and perspectives for the development of beneficiation methods for finely dispersed ores.
43. M. S. Prasad, N. Chakravorty, G. P. Mathur and V. A. Altekar : The development of mineral beneficiation process for the concentration and recovery of molybdenum minerals from the low-grade ores of the Singbhum Thrust Belt-Bihar, India.
44. V. Formanek, H. Gistau, A. Milhau and C. Nader : Coarse middlings flotation. Application to the beneficiation of Soldado copper ore (Chile).
45. L.D. Ratobylskaya, V.I. Klassen, N.N. Boiko, M. I. Baskakova and Yu. M. Smirnov : Development and industrial introduction of new concentration processes for phosphorites of

complex mineral composition.

Special processes-Session X

46. Y. A. I. Attia and J. A. Kitchener : Development of complexing polymers for selective flocculation of copper minerals.
47. V. A. Mokrousov, V. A. Lileev, B. S. Lagov, A. O. Kozhevnikov, A. M. Alekhin, A. P. Tatarnikov, T. N. Polyanskaya and S. N. Syromyatnikov : Neutron-radiometric process for ore beneficiation.

Ecological problems and waste treatment-Session XI

48. R. Mancini and E. Occella : Some problems shared by mineral processing and atmospheric pollution studies.
49. P. Somasundaran, E. L. jr. Smith and C. C. Harris : Dewatering of phosphate slimes using coarse additives.
50. A. D. Read R. M. Manser : Residual flotation reagents-problems in effluent disposal and water re-cycle.
51. N. N. Khavski, V. D. Tokarev, B. V. Nevski, A. M. Kotov, M. P. Vilianski and I. A. Yakubovitch : Clarification of water and aqueous solutions by the flotoflocculation method.
52. P. G. Broman : Purification of industrial and municipal waste water by means of mineral slime.
53. M. Dolezil, M. Patera and L. Ludvikova : Application of mineral beneficiation processes to metal recovery from non-ferrous metallic residues.