

Characterization of Iron Ore Agglomerates – Image Analysis and Digital Microscopy

S. Paciornik

DCMM PUC-Rio, Rio de Janeiro, RJ, Brazil

Brazil is one of the largest producers of iron ore and its agglomerates – pellets and sinters. Quality control of these materials employs different techniques. One of the most effective is optical microscopy, in which the present phases are visually identified by their typical reflectivities and morphologies. Traditional point counting methods are then used to evaluate phase fractions.

However, these relatively “low-tech” materials are rather complex. They are composed of several phases, in different spatial arrangements. Sinters are extremely non uniform. Pellets show specific radial variations. These characteristics point to the need of automation in the characterization of these materials.

Digital microscopy can be successfully applied in these situations. Automatic specimen scanning, with autofocus, mosaic images covering very large sample areas, stable acquisition conditions, automatic phase discrimination and quantification, are some of the possibilities provided by this methodology.

The current talk will describe the development of a methodology for automatic characterization of iron ore pellets and sinters, through the intense use of image analysis and digital microscopy.

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sidnei@puc-rio.br, DCMM PUC-Rio, Rua Marquês de São Vicente 225, Prédio Leme, Sala 501L, Rio de Janeiro, RJ, 22453-900, Brazil