

Transformation of Automated Optical Image Analysis Software Mineral4/Recognition4 to Mineral5/Recognition5

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ABSTRACT

The automated optical image analysis software Mineral4/Recognition4 is capable of performing comprehensive characterisation of different materials throughout the iron ore value chain including ore fines, lump, sinter, pellets, and cokes. It has been successfully used by CSIRO for industrial and research projects and has been independently licensed to several world leaders in iron ore production and ironmaking. The M4/R4 software was strongly integrated with a Zeiss microscope to make use of the company's powerful AxioVision software. This required users to own both Zeiss microscope hardware and AxioVision software in order to be able to use Mineral4/Recognition4 to its full image acquisition and analysis capacity, which therefore was not available to the users of the equipment produced by other major microscope manufacturers. In recent times however, Zeiss has indicated that the AxioVision software will no longer be supported.

To overcome this limitation, CSIRO has proceeded with the next generation of this software, Mineral5/Recognition5. Importantly, the M5/R5 system has been developed without any dependence on a specific microscope hardware platform. Furthermore, the image analysis functionality is now based on openCV open access software and has been fully rewritten using state-of-the-art software development tools to allow reading and processing of all major image formats. Although past applications have been specific to iron ore and ironmaking applications, other improvements such as the increased number of minerals allowing better gangue segmentation, flexible mineral definitions, improved form behaviour and refined analysis routines enables the platform-independent Mineral5/Recognition5 image analysis system to be used by researchers in any area of mineralogical or materials research.

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