

Handling, Exporting and Archiving Automated Mineralogy Data Using TESCAN TIMA

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Abstract : Within the mining sector, SEM-based Automated Mineralogy (AM) has been the standard application for quickly and efficiently handling mineral processing tasks. Over the last decade, the trend has been to analyze larger numbers of samples, often with a higher level of detail. This has necessitated a shift from interactive sample analysis performed by an operator using a SEM, to an increased reliance on offline processing to analyze and report the data. In response to this trend, TESCAN TIMA Mineral Analyzer is designed to quickly create a virtual copy of the studied samples, thereby preserving all the necessary information. Depending on the selected data acquisition mode, TESCAN TIMA can perform hyperspectral mapping and save an X-ray spectrum for each pixel or segment, respectively. This approach allows the user to browse through elemental distribution maps of all elements detectable by means of energy dispersive spectroscopy. Re-evaluation of the existing data for the presence of previously unconsidered elements is possible without the need to repeat the analysis. Additional tiers of data such as a secondary electron or cathodoluminescence images can also be recorded. To take full advantage of these information-rich datasets, TIMA utilizes a new archiving tool introduced by TESCAN. The dataset size can be reduced for long-term storage and all information can be recovered on-demand in case of renewed interest. TESCAN TIMA is optimized for network storage of its datasets because of the larger data storage capacity of servers compared to local drives, which also allows multiple users to access the data remotely. This goes hand in hand with the support of remote control for the entire data acquisition process. TESCAN also brings a newly extended open-source data format that allows other applications to extract, process and report AM data. This offers the ability to link TIMA data to large databases feeding plant performance dashboards or geometallurgical models. The traditional tabular particle-by-particle or grain-by-grain export process is preserved and can be customized with scripts to include user-defined particle/grain properties.

Keywords : Tescan, electron microscopy, mineralogy, SEM, automated mineralogy, database, TESCAN TIMA, open format, archiving, big data

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