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Measurement of crystal size distributions

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ABSTRACT

Studies of crystal size distributions (CSD) can reveal much about how rocks solidify and under what conditions. Data from two-dimensional sections can be readily acquired at many different scales, from electron microscope images, thin sections, slabs, outcrops, and so on, but the conversion to true, three-dimensional values is complex. The widely used Wager method does not have a good theoretical basis and does not give accurate results. A modification of the Saltikov correction method is proposed here that is more accurate and can account for different crystal shapes and fabrics. Population densities determined by this method differ by factors of 0.02 to 100 from those determined by the Wager method. Published CSDs determined using other methods can be recalculated if the crystal shape and fabric parameters can be estimated. The method has been incorporated into a new program, CSDCorrections.