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Application of Pattern Recognition Technique to the Quality Characterization of Superficial Microstructures in Steel Coatings

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Abstract : This paper describes the application of traditional computer vision techniques as a procedure for automatic measurement of the secondary dendrite arm spacing (SDAS) from microscopic images. The algorithm is capable of finding the lineal or curve-shaped secondary column of the main microstructure, measuring its length size in a micro-meter and counting the number of spaces between dendrites. The automatic characterization was compared with a set of 1728 manually characterized images, leading to an accuracy of −0.27 µm for the length size determination and a precision of ± 2.78 counts for dendrite spacing counting, also reducing the characterization time from 7 hours to 2 minutes.

Keywords : dendrite arm spacing, microstructure inspection, pattern recognition, polynomial regression
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