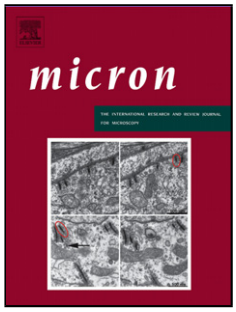

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Nanoscale morphological analysis of soft matter aggregates with fractal dimension ranging from 1 to 3

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Abstract

While the widespread emergence of nanoscience and nanotechnology can be dated back to the early eighties, the last decade has witnessed a true coming of age of this research field, with novel nanomaterials constantly finding their way into marketed products. Being the performance of nanomaterials dominated by their nanoscale morphology, their quantitative characterization with respect to a number of properties is often crucial. In this context, those imaging techniques able to resolve nanometer scale details are clearly key players. In particular, atomic force microscopy can yield a fully quantitative tridimensional (3D) topography at the nanoscale. Herein, we will review a set of morphological analysis based on the scaling approach, which give access to important quantitative parameters for describing nanomaterial samples. To generalize the use of such morphological analysis on all *D*-dimensions (1D, 2D and 3D), the review will focus on specific soft matter aggregates with fractal dimension ranging from just above 1 to just below 3.

1. Introduction

Since they became available, non-optical microscopy techniques were used for imaging material surfaces and aggregates at the nanometer length scale. The Scanning Electron Microscope (SEM) was the first microscope being employed to this end(Smith and Oatley,