

ABSTRACT**ROUGHNESS MEASUREMENT SYSTEM AND METHOD THEREOF BASED ON
DATA FUSION AND HYBRID TECHNOLOGY**

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The present invention describes a system for measuring surface roughness of a sample, comprising a light source (101) for providing a light of multiple wavelength illumination to the sample, a scanning system (107), one or more objective lenses (108) and a focusing lens (110) for scanning the light at fractions of a nano-meter level, and for passing and focusing
10 the light reflected from the sample to a detector (111). The system has an acquisition module linked to the detector (111) for producing pixels from light signals detected by the detector (111), wherein the pixels are used by the acquisition module for generating a focus variation signal, for forming a colour-map through focus scanning microscopy signal and for getting a spatial filtered confocal microscopy signal, and a contrast ratio fusion module for merging
15 information from the focus variation signal, the confocal microscopy signal, and the through focus scanning optical microscopy signal produced by the acquisition module for providing a three-dimensional image of the sample.

Figure 1