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Surface chemical analysis — Measurement of lateral and axial resolutions of a Raman microscope

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This document was prepared by Technical Committee ISO/TC 201, *Surface Chemical Analysis*.

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Introduction

The Raman microscope is usually built on an optical micro-spectroscopy platform and integrated with laser input, laser line filter and spectrometer output. The laser focus is scanned on the sample and the Raman-scattered photons are collected from each pixel to record the full spectrum. Raman spectral images contain a variety of spectral information, such as the intensity, peak position, or peak width of certain Raman bands.

Spatial resolution is one of the main specifications of the Raman microscope. However, the definition and the measurement procedures largely vary depending on the manufacturers of the Raman microscope, therefore the general assessment of the spatial resolution has been limited. In this document, we provide a standardized protocol that describes the measurement of the spatial resolution of a Raman microscope by performing simple measurements using specific standard specimens.

In the Raman microscope, spatial resolution includes the lateral resolution and axial resolution. For this evaluation, there are several methods, such as straight edge method, narrow line method and grating method. This document describes only the narrow line method for evaluation of the spatial resolution for Raman measurement. A case study of the measurement is provided in [Annex A](#).

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