Holographic Multipoint Raman Microscopy
C. Lingel, T. Haist, W. Osten

Motivation
Due to the weak Raman signal, it is in general unavoidable to use long integration times for the sensor to detect the spectrum. Following this, scanning a sparsely object is a time consuming process, what is disadvantageous for some application as for example an in vitro cancer detection during an operation. Therefore, we propose a system which is suitable to measure multiple spatial distributed points in parallel using a holographic optical setup.

Optical Setup

Measurement Results Graphite (Pencil)

Camera Image

Spectra

Conclusion
It is possible to measure multiple Raman spectra using a hologram in combination with a pinhole array in an intermediate image plane, functioning as a confocal filter. This approach is scalable, using a stronger laser and a different hologram / pinhole array combination.

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