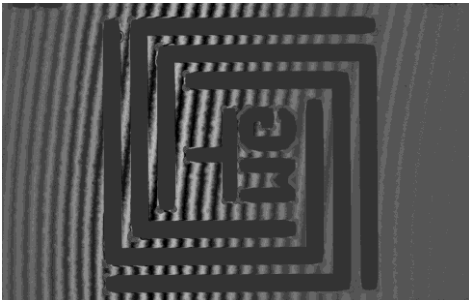
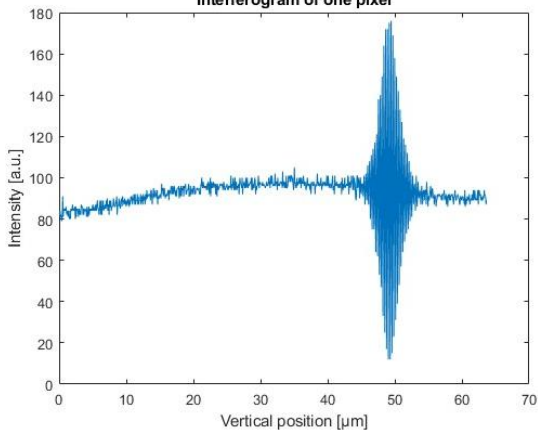


Good vibrations ? – High-resolution measurement of surface topographies in production environments

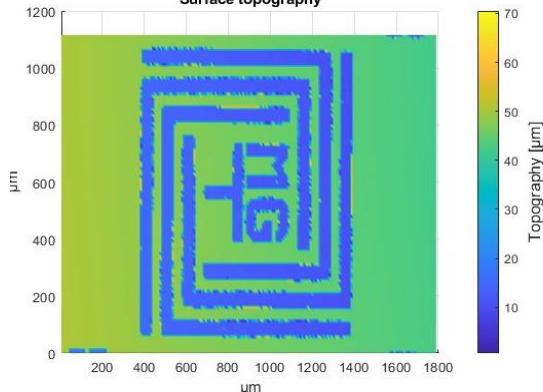
Picture of the measured surface with interference fringes



Interferogram of one pixel



Surface topography



White light interferometry (WLI) is a highly precise measurement method that uses the interference between the light reflected from the measurement surface and a reference beam in order to determine the surface topography from a series of images, by using the short coherence length of the light source.

However, this method is susceptible to vibrations, which makes it difficult to use in industry. Therefore, the influence of vibrations on the measurement results is to be compensated by using data from recorded disturbance vibrations, which is achieved here by means of exactly known (specified) disturbance movements.

The aim is to use this data to deduce the actual position of the measurement object and thus be able to perform an undisturbed measurement of the surface. By comparing the laboratory measurements with and without the influence of vibrations, it should also be possible to estimate the extent of the deviation in the topography caused by vibrations.

Possible contents

- Influence of vibrations on the measurement uncertainty of surface topography (through experiments and simulation)
- Optimization of an existing WLI test setup
- Realization of defined disturbance patterns
- Determination of disturbance motion from image or sensor data

Your profile

- Basic knowledge of Matlab or Python
- Enthusiasm for experimentation
- Interest in image and signal processing

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