

Description

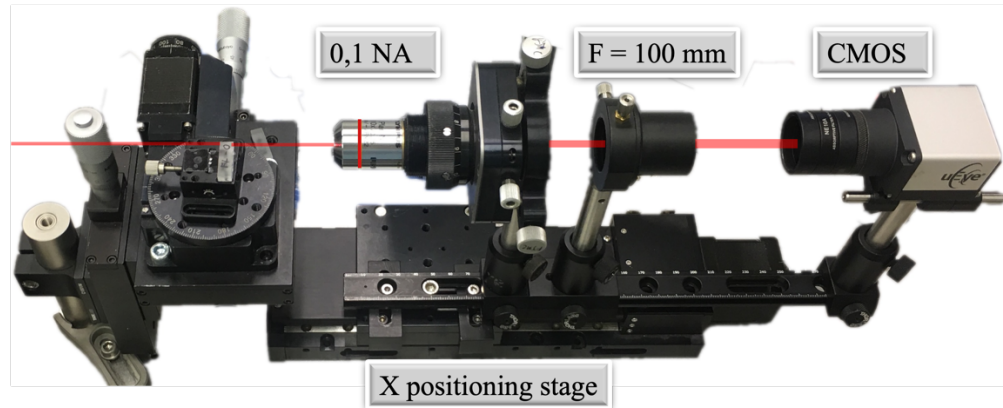


Fig 1. Beam profile measurement stand.

Fig 1. Shows the beam profile measurement stand. HeNe beam goes through the fused silica sample (from left to right) with the written optical element inside its volume. On the motorized positioning stage there is 0.1 NA objective lens and 100 mm spherical lens, which together magnifies the view by 2.22 times, and the camera, which is needed to capture the beam intensity distribution. The stage is used to find the focus on the element and to capture the images at different distances from the sample in XY plane.

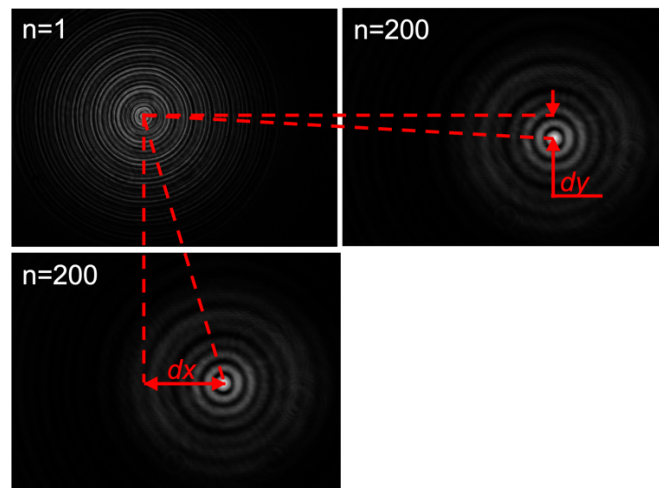


Fig 2. Setting of the first and the last picture center points with MATLAB.

Then captured images are analyzed with MATLAB. The method includes intensity profile determination and stacking intensity profiles to draw XZ beam profile plot. The intensity is found by choosing the center point of the image which refers to the center of the laser beam and the element and taking intensity profile from x axis. While capturing the images at different positions from the sample it is very hard to place X positioning stage exactly parallel to the laser beam, which results in center point shift in x and y direction. In this case center points are set by hand with MATLAB and shifts are calculated by comparing the first and the last images (Fig 2.).