2.3 Microscopy: Exercises

Lecture 1: Basics, Components

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28.04.2017

A basic 4f-Microscope system

Consider a microscope in a 4f-configuration, using a 40x Nikon objective.
The focal length of the corresponding tube lens is 200mm.
A CCD camera is placed in the intermediate image plane.

1. Make a drawing of the setup as a 4f system precisely denoting all the distances along the optical axis.
2. What is the focal length of the objective?
3. What is the diameter of the objective pupil.
4. What is the magnification of the system (Object to CCD)?
5. How large would a 10 µm object appear to an observer if the intermediate image is observed using a 10 cm focal length achromate?