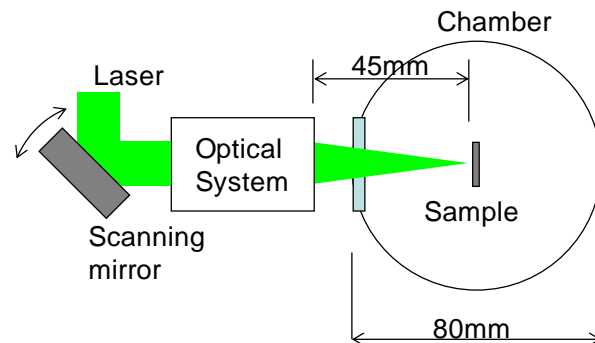Due: Feb. 16, 2015

Design Project 2

Consider an optical system depicted in figure 1. As we discussed in the class, design an optical system which has a 40 mm effective focal length (f'sys) and a 45 mm or longer working distance (or called back focal length, fb).

Step 1: **Technical statement**
   a.   Wavelength, λ = 532 nm
   b.   Spot size < 10 µm (focused on the sample)
   c. f'_{sys} = 40 mm
   d.   Working distance, f_b >= 45 mm
   e.   Window material, t=5mm BK7

Design Project 1: Describe two more technical statement of your own. The additional statements can be anything but they must be technical and quantitative descriptions.
   f.   **YOUR OWN SPEC #1**
   g.   **YOUR OWN SPEC #2**

Step 2: 1st Order Design

Design an optical system with two or more <u>thin lenses and a window</u>. Focal lengths, principal points and spacing of each lens and the laser beam diameter have to be specified. Create spec table, and put numbers there.

Step 3: Model the 1st order design by CodeV (**Discussion session #2**)

By using CodeV, confirm first order quantities, f, bf, and F/#.

Specifications:
Wavelength:d-line

Field: On-axis only

Note that the spot size in diameter is given by 2.44 λ F, where λ is wavelength, F is F-number.