DVD OPU Lens Characteristics Supplemental Document

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This document was prepared to provide information on an objective lens used in a DVD drive. This lens was extracted from a DVD OPU, and is similar to the lens fitted to the DVD OPU microscope prototype.

OPU Lens Characteristics

The lens in question is shown in Figure 1.

The following characteristics were obtained:

- Focal Length: 3.5 mm ±0.5 mm
- Diameter: 4.0 mm ±0.5 mm
- Refractive Index: 1.3
- Radius of Curvature & Thickness: 2.0 ± 0.5 mm
- Depth of Field: 2.0 ± 0.5 to 6.0 ± 0.5 mm
- Field of View: 3.7 mm by 2.1 mm = 7.8 mm^2

Given these parameters, the maximum magnification with the best picture quality will be when the front of the lens is 3.5 mm in front of the view point. A proper field of view would be between 2.0 mm to 6.0 mm in front of the view point.

Thus, these are the most important considerations for designing a 3D DVD OPU microscope. As long as the microscope's view point is in this field of view (preferably at the focal length distance from the front of the lens), the microscope is maximizing it's magnification and image quality.

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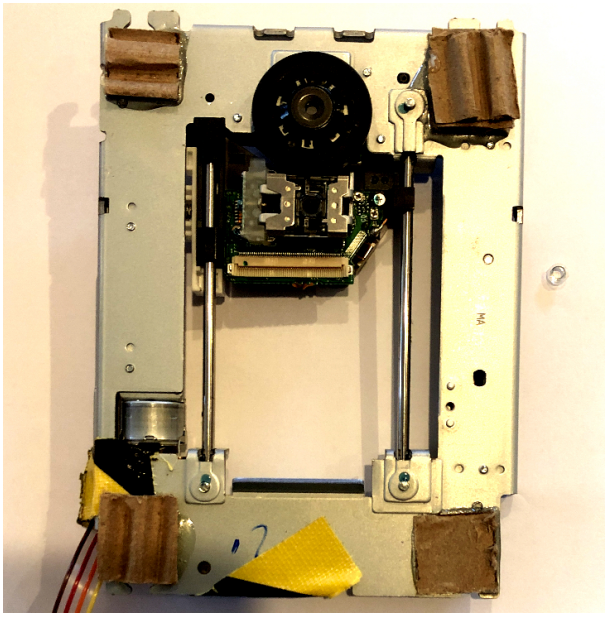

Figure 1: Extracted DVD OPU lens with OPU.

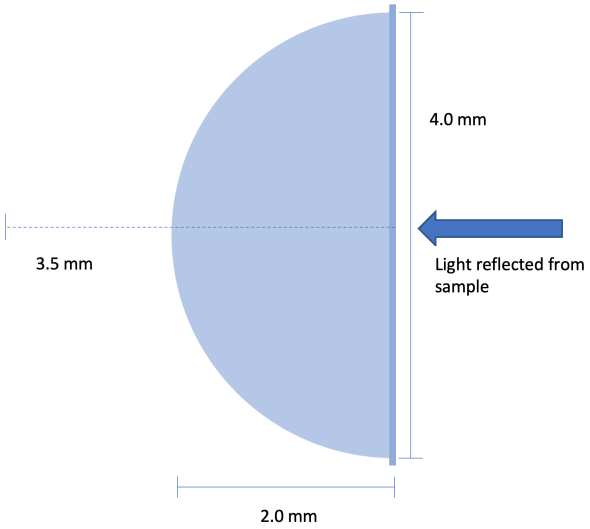

Figure 2: Detailed drawing of lens.