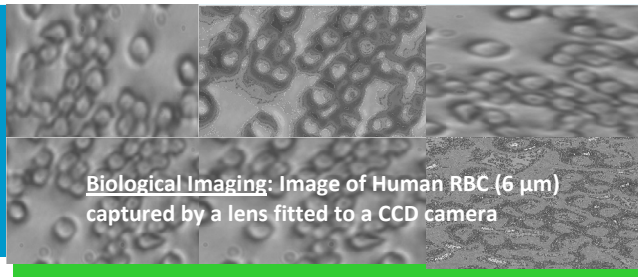
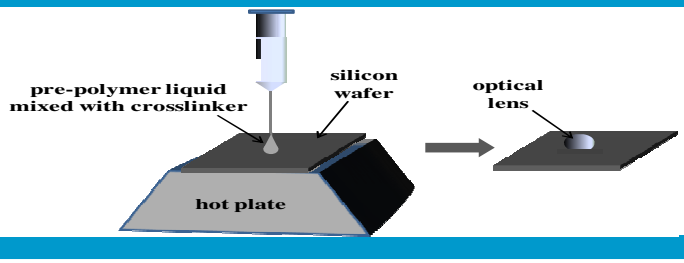
TECHNOLOGY AVAILABLE FOR TRANSFER

Soft Optical Lens and Lens Filters



Biological Imaging: Image of Human RBC (6 µm) captured by a lens fitted to a CCD camera



Low cost one step process for the production of optical lens (es) and lens filter (s) with high magnification, resolution and good contrast

Background

The available methods for fabrication of optical lenses suffer from the disadvantage of high process costs. Also, different processes have to be adopted for different shapes of the lens. In most of the processes, the quality of the surface finish is also a concern; and there are issues with the precise control of the lens curvature, which affects the magnification.

The present technology provides a low cost, one step process for the fabrication of optical lenses with high magnification, good contrast and diminished aberrations.

Technology

The present technology provides a process for fabrication of spherical and aspherical soft optical lenses of varying sizes i.e. micro, milli and sub centimeter sizes and also of desirable curvature.

The process involves curing of small volume of a polymeric liquid on a smooth substrate.

The radius of curvature of the lens may be varied by varying the volume of liquid

The method also provides for the fabrication of optical lenses transparent to a few wavelengths but opaque to certain other wavelengths and thus, can be used as filters.

Key Features

The process provides for fabrication of optical lens with the following features:

1. Radius of curvature of the lens remains constant in the meridian direction but may vary resulting in an aspherical profile
2. Lens remains symmetric in the azimuthal direction
3. Numerical aperture of the lens may range from 0.22 to 0.45
4. Magnification may vary from 185x to 600x
5. Contrast may vary from 0.38±0.05
6. Surface of the lens may be modified for anti-reflective applications.

Value Proposition

- Fabrication of optical lens with high optical magnification, good contrast and diminished aberration
- Fast and single step process
- Surface polishing of lens not required.
- Process provides lens of variable sizes and desirable curvature
- Fabrication of template or mold for giving desired shape not needed, hence cost is reduced.

Potential Applications

- Optical microscopy
- Optical metrology
- Camera
- Dentoscope
- Dermatoscope
- Enhancoscope
- Solar cells

State of Development

Use and capability of lenses successfully demonstrated by capturing microscopic images of very small objects.

Intellectual Property Status - Patent pending

Commercial Opportunities - BCIL is actively seeking partners for the commercial development of the product

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