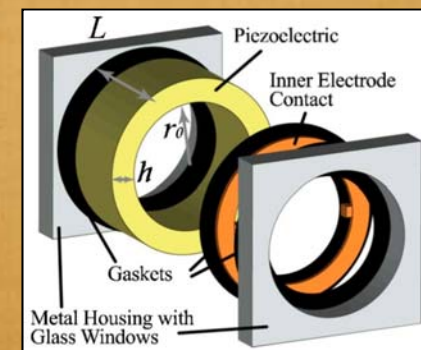
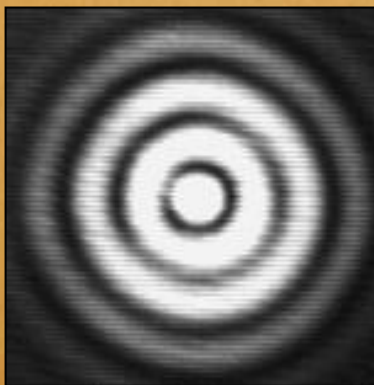


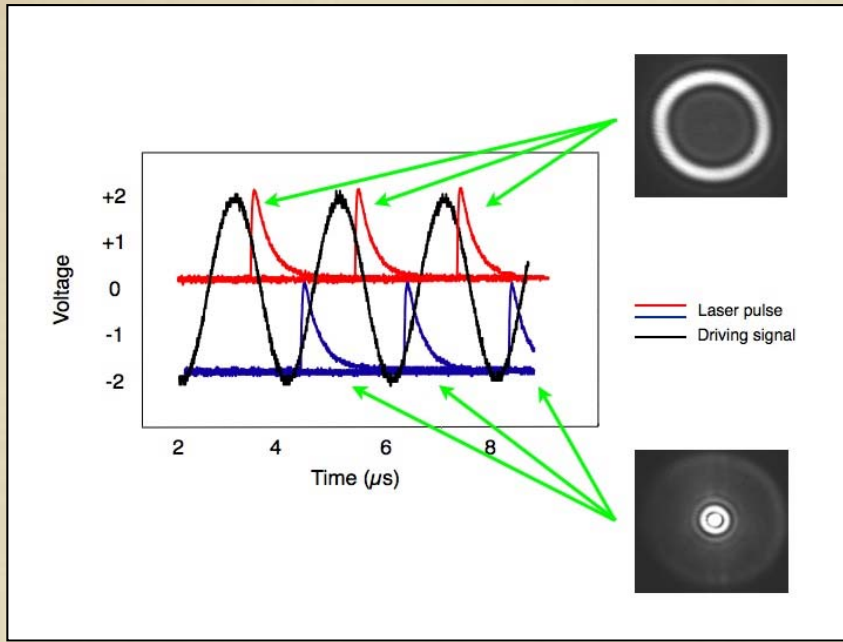
Characterization of high-speed varifocal tunable acoustic gradient index of refraction lens

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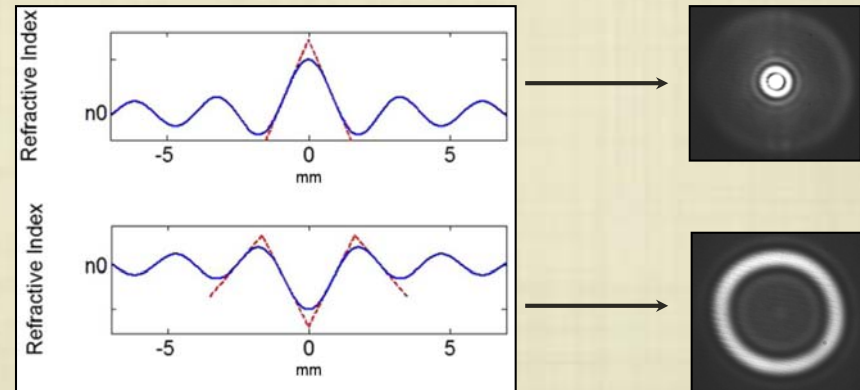
A cylindrical piezoelectric transducer in the tunable acoustic gradient index of refraction (TAG) lens forms acoustic waves in the fluid within this cylinder creating continuous density and index of refraction variations resulting in high switching speeds.



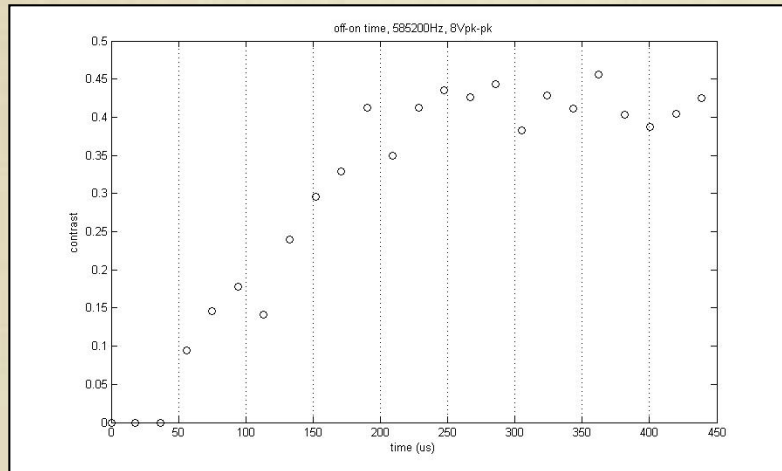
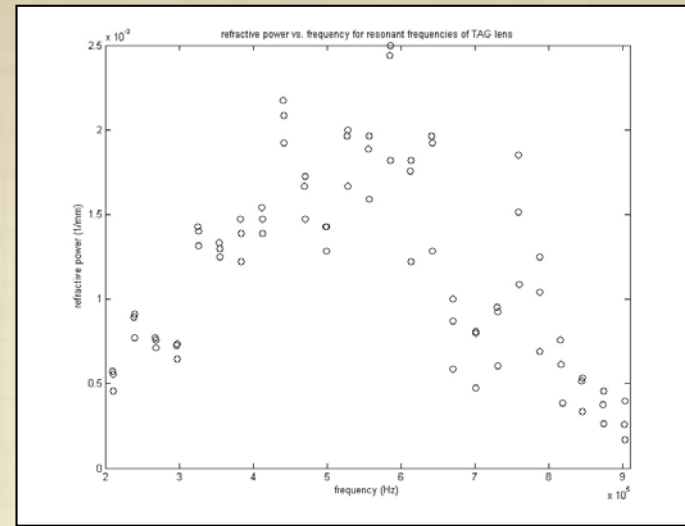


Images are obtained using a pulsed laser source which is synchronized with the driving signal of the TAG lens. This makes it possible to precisely image the beam at any point during the index of refraction variation.

Instantaneous pattern selection is dependent on the period of the frequency-modulated signal. The light exiting the TAG lens continuously oscillates, within one period of the signal, between a ring and a dot pattern.



Refractive power is a measure of the ability of the lens to bend incident light. Radius of curvature analysis is performed to determine the “best” resonance frequency.



Turn-on time is dependent mostly on the speed of an acoustic wave in the filling fluid.

Turn-off time is dependent on the density of the in the filling fluid.

