

## The Review of Laser Engineering

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## The Review of Laser Engineering

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[\[Image PDF \(1484K\)\]](#) [\[References\]](#)**A New Technology of the Alignment Control of Liquid Crystals Using Infrared Laser**[Yo SHIMIZU](#)<sup>1)</sup>, [Hirosato MONOBE](#)<sup>1)</sup> and [Kunio AWAZU](#)<sup>2)</sup>

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**Abstract:** It was recently found that an alignment change of a columnar mesophase is induced by infrared laser incidence via vibrational excitation of a chemical bond constructing the molecular frame of mesogen. The new domain is quite stable to stand for several hours at the temperature. This phenomenon was not observed for conventional rod-like liquid crystals with relatively less viscous order of molecules such as nematic, smectic A and smectic C phases, indicating the strong anchoring force of the substrate surface is predominant for the alignment behavior. A relation in direction between the polarization of incidence and the transition dipole of the selected vibrational mode of the chemical bond was recognized. The present status of studies on alignment control of highly ordered mesophases is briefly shown with a simple introduction of liquid crystals and with studies on photoinduced alignment control in these years.

**Key Words:** [Free electron laser](#), [Infrared pulsed laser](#), [Liquid crystal](#), [Alignment control](#), [Vibrational excitation](#)

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