

76 MHz is used both as a source of Stokes wave and to synchronously pump Laser 2, a tunable 850–890 nm optical parametric oscillator (OPO) HighQ Laser with a output of 10 ps pulses. The synchronously pumped OPO coherent device provides temporal synchronization with Laser 1 and serves as a source of the pump wave. Picosecond outputs of Laser 1 and Laser 2 were coincided in time and in space, and then directed to an inverted microscope. A computer-controlled XY galvano scanner GSI Lumonics provided fast scan of the sample in the lateral focal plane of a water-immersion objective $O1$ 60 \times , numerical aperture NA = 1.2. The objective $O1$ was mounted on a computer-controlled piezostage Piezosystem Jena for scanning along the microscope's optical axis. Distribution of Laser 1 power

dye. The strongest signal corresponds to the parts of the sample with $\hat{n} \cdot \mathbf{r}$ parallel to the linear polarization directions of probing light, as shown in Fig. 3 d ; TPF and CARSPM images in different modes are consistent with our FCPM studies of FCDs.² This allows one to map out the pattern of molecular orientation in 3D, as demonstrated in Fig. 4. F-CARS images of a single Fig. 4 b and multiple Fig. 4 d FCDs are constructed from 21 in-plane cross sections obtained at different depths of the sample. In FCDs, the equidistant layers fold around the confocal defect lines, the ellipse and the hyperbola Fig. 4 a . Multiple FCDs of different eccentricities are embedded into the SmA slab with planar stacks of layers Fig. 4 d . Experimental images Figs. 4 b and 4 d are consistent with the computer-simulated layered structure Fig. 4 a and the 3D director field Fig. 4 c