

## A biaxial nematic liquid crystal

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**Abstract.** We report a biaxial nematic liquid crystal in a simple thermotropic system.

**Keywords.** Thermotropic liquid crystal; biaxial nematic.

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The suggestion was made a few years ago (Chandrasekhar 1984) that a convenient way of obtaining the biaxial nematic phase in a simple (low molecular weight) thermotropic system would be by 'bridging the gap' between rod-like and disc-like molecules, i.e. by preparing a mesogen that combines the features of the rod and the disc. We succeeded in producing such molecules—nematogenic copper complexes—and reported preliminary studies on them (Chandrasekhar *et al* 1986, 1987). We have since made careful conoscopic observations which reveal the occurrence of the biaxial nematic phase ( $N_b$ ). Independently, Malthete *et al* (1986) reported the  $N_b$  phase in another compound, 4-[3', 4', 5'-tri(*p*-*n*-dodecyloxybenzyloxy)]-benzoyloxy, 4''-*p*-*n*-dodecyloxybenzoyloxybiphenyl, which again combines the features of the rod and the disc. Surprisingly, however, in this case they find an *inverted* sequence of transitions, i.e.,  $N_b$  occurs at a higher temperature relative to  $N_u$ , the uniaxial phase.

We describe our observations on one complex (hereafter referred to as A):

