

Abstract Submitted
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Micro-focus synchrotron X-ray diffraction study of novel mesomorphic porphyrin derivatives¹ SHIN-WOONG KANG, LANFANG LI, QUAN LI, Kent State University, Kent, OH 44242, MICHI NAKATA, University of Colorado, Boulder, CO 80309, BRANDON CHAPMAN, RONALD PINDAK, Brookhaven National Laboratory, Upton, NY 11973, SATYENDRA KUMAR, National Science Foundation, 4201 Wilson Blvd., Arlington, VA 22230 — The mesophase structures of three novel mesomorphic porphyrin derivatives were examined using polarized optical microscopy and microfocus synchrotron X-ray diffraction at various temperatures using a beam with a $14\ \mu\text{m} \times 14\ \mu\text{m}$ cross-section at the bending magnet beamline of Sector 20 at the Advanced Photon Source. The x rays were diffracted from microscopic monodomains in thin glass cells while simultaneously observing the optical textures. The results confirmed a hexagonal arrangement of discotic columns in the liquid crystalline phase. At a lower temperature, highly ordered plastic crystal phase was obtained. The results of the microdiffraction experiment and promising properties of these compounds as a carrier transporting material will be presented.

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