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Dispersion and Current-Voltage Characteristics of Helical Polyacetylene Single Fibers Y.W. PARK, H.J. LEE, A.N. ALESHIN, J.Y. LEE, Y.S. KIM, D.W. KIM, School of Physics and NSI-NCRC, Seoul National U, Seoul, Korea, Z.X. JIN, Department of Chemistry, Renmin U of China, Beijing, China, M.J. GOH, K. AKAGI, Institute of Materials Science and TIMS, U of Tsukuba, Tsukuba, Japan — To study the transport properties of individual helical polyacetylene (PA) fibers, we developed a method to extract a single fiber from tightly entangled ropes of helical PA bulk film. After a few minutes of sonication of a piece of helical PA bulk film in an organic solution containing surfactant, a droplet of solution is deposited on the pre-patterned electrode under argon atmosphere. AFM images show that extracted helical PA fibers are typically 10 μm in length and 100–200 nm in diameter. We found that the helicity of bulk materials is conserved. We present the temperature dependencies of current-voltage characteristics of individual helical PA fibers doped with iodine.

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