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HPLC and Semi-Prep Scale Fractionations of Poly(3-alkyl thiophenes) SCOTT LEFEVRE, Rensselaer Polytechnic Institute, HEUNGYEOL CHOI, TAIHYUN CHANG, Pohang University of Science and Technology, CHANG RYU, Rensselaer Polytechnic Institute — Molecular weight and polydispersity play a crucial role in crystal formation for thin-films of conducting polymers and subsequently their charge mobility. In order to obtain well defined conducting polymer samples, high performance liquid chromatography (HPLC) analysis and separation of poly(3-alkyl thiophene) (P3AT) systems has been explored. In particular a precipitation-redissolution technique has been employed for the fractionation of P3ATs. Both solvent composition and temperature have been manipulated to tune the solvent quality on both hydrophobic and hydrophilic type stationary phases in order to obtain more well-defined samples of these electrically conducting polymers. In addition to HPLC separations on an analytical scale, semi-prep scale LC separations in the regime of 10mg to 100mg has also been carried out as proof of concept. Finally the interplay between solvent quality and the surface energy has been investigated using HPLC stationary phases consisting of either bare silica or C18 bonded silica.

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