Temperature dependent spectroscopy of poly[bis-(2-ethyl)hexylfluorene]/(9,9-di-n-octylfluorene) copolymers\textsuperscript{1} HYEUNSEOK CHEUN, MICHAEL WINOKUR, University of Wisconsin, BENJAMIN NEHLS, FRANK GALBRECHT, ULRICH SCHERF, University of Wuppertal — A series of random polyfluorene (PF8) copolymers comprised of linear di-n-octyl (F8) and branched bis(2-ethylhexyl) (F2/6) units has been synthesized and characterized by temperature dependent steady-state absorption and emission spectroscopy. The F2/6 polymer is already well known for forming conformationally disordered five fold helices while the F8 polyfluorene adopts a number of distinct near-planar type conformational isomers. One of these conformational sequences is an unusual low energy absorption and emission band known as the \( \beta \) phase. In these copolymers the PF chains must temporize between differing interchain packing motifs, pentagonal and planar type structures, and different main chain morphologies. Increasing the content of F2/6 monomers strongly affects the formation of the \( \beta \) phase conformer, enhances the extent of conformational disorder (and the effective electron-phonon coupling strengths) and also alters the bulk structural phase behavior. There are only weak correlations between the overall phase behavior and the observed spectroscopy at temperatures below 100 °C.

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