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Mesophase Behavior of Polyion-Complexed Azobenzene Chromophores in the Bulk C. GERALDINE BAZUIN, University of Montreal, CARMEN M. TIBIRNA, Laval University, QIAN ZHANG, University of Montreal — We have complexed ammonium-functionalized 4-nitro-4'-alkoxy-azobenzene mesogens to various polyelectrolytes (carboxymethylcellulose, cellulose sulfate, polyacrylate, polystyrene sulfonate, etc.) via ion-exchange procedures. The bromine-neutralized mesogens melt directly into the isotropic phase, whereas the complexes are thermotropic liquid crystals with high mesophase stability. Stoichiometric complexes show well-defined glass transitions in the vicinity of ambient temperature, and often a second (weak) Tg-like transition at much higher temperatures. The clearing temperatures are generally reached in the 130-180 degree C range, above the mesogen melting points. They are organized as disordered monolayer lamellar (SmA) mesophases. The variations in transition temperatures (glass transitions, clearing temperatures) are generally moderate, and can be correlated with specific molecular parameters such as spacer length and polymer backbone. The transitions are particularly sensitive to the stoichiometry of the components. Some preliminary results regarding film-making and optical responses of these materials will also be presented.

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