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**Microstructural Organization of Elastomeric Polyurethanes with Siloxane-Containing Soft Segments** TAEYI CHOI, The Pennsylvania State University, JADWIGA WEKLSER, AJAY PADSALGIKAR, Aortech Biomaterials, JAMES RUNT, The Pennsylvania State University — In the present study, we investigate the microstructure of two series of segmented polyurethanes (PUs) containing siloxane-based soft segments and the same hard segments, the latter synthesized from diphenylmethane diisocyanate and butanediol. The first series is synthesized using a hydroxy-terminated polydimethylsiloxane macrodiol and varying hard segment contents. The second series are derived from an oligomeric diol containing both siloxane and aliphatic carbonate species. Hard domain morphologies were characterized using tapping mode atomic force microscopy and quantitative analysis of hard/soft segment demixing was conducted using small-angle X-ray scattering. The phase transitions of all materials were investigated using DSC and dynamic mechanical analysis, and hydrogen bonding by FTIR spectroscopy.

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