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Synthesis of amphiphilic diblock copolymer for surface modification of Ethylene-Norbornene Copolymers SIMON LEVINSEN, WINNIE EDITH SVENDSEN, Department of Micro- and Nanotechnology, Technical University of Denmark, ANDY HORSEWELL, Department of Mechanical Engineering, Technical University of Denmark , KRISTOFFER ALMDAL, Department of Micro- and Nanotechnology, Technical University of Denmark — The aim of this work is to produce polymer modifiers in order to develop hydrophilic polymeric surfaces for use in microfluidics. The use of hydrophilic polymers in microfluidics will have many advantages e.g. preventing protein absorbance. Here we present an amphiphilic diblock copolymer consisting of a bulk material compatible block and a hydrophilic block. To utilize the possibility of incorporating diblock copolymers into ethylene-norbornene copolymers, we have in this work developed a model poly(ethylene-1-butene) polymer compatible with the commercial available ethylene-norbornene copolymer TOPAS. Through matching of the radius of gyration for the model polymer and TOPAS the miscibility was achieved. The poly(ethylene-1-butene) polymer was synthesized from a hydrogenated anionic polymerized polybutadiene polymer. As hydrophilic block poly(ethylene oxide) was subsequently added also with anionic polymerization. Recent miscibility results between the model polymer and TOPAS will be presented, as well ongoing efforts to study the hydrophilic surface.

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