



**Fig. 2** Photographs of film 1 (a), film 2 (b) and film 3 (c). Film 1 was prepared by applying a nitromethane solution of oligomer 1 (1 wt%) to a glass plate. Film 2 was prepared on an indium-tin-oxide coated glass plate (ITO) by repetitive potential-sweep treatment of 3-methoxythiophene between -0.5 V and 1.3 V vs. SCE at a sweep rate of 10 mV/s. Film 3 was prepared on the ITO prepared by the controlled-potential electrolysis of 3-methoxythiophene at 1.2 V vs. SCE.