Characterization methods of nano-patterned surfaces generated by induction heating assisted injection molding - DTU Orbit (08/11/2017)

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An induction heating-assisted injection molding (IHAIM) process developed by the authors is used to replicate surfaces containing random nano-patterns. The injection molding setup is developed so that an induction heating system rapidly heats the cavity wall at rates of up to 10 ◦ C/s. In order to enable the optimization of the IHAIM process for nano-pattern replication, it is necessary to develop robust methods for quantitative characterization of the replicated nano-patterns. For this purpose, three different approaches for quantitative characterization of random nano-patterns are applied and compared. Results show that the use of IHAIM is an efficient way to improve replication quality. All three measurement methods are capable of detecting the trend of the replication quality of the surface changing the process condition.

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