Fast reaction mechanisms for a new technology to produce surface modified thermoplastic parts by in-situ modification in injection moulding

Initiative: Herstellung funktionaler Oberflächen (beendet)

Bewilligung: 29.11.2006

Laufzeit: 3 Jahre

Surfaces of plastic parts often need a pre-treatment before they can be further bonded or painted. Such treatment procedures are done in separate processing units. It causes additional costs for equipment, handling and logistics. In this project the scientific background of an innovative approach of process-integrated surface modification by surface-reactive injection moulding is investigated and its potential explored. The approach uses the high temperature of the polymer melt in injection moulding for a chemical reaction that binds a polymeric modifier as a molecular layer onto the surface of the plastic part. The modification can be controlled very effectively by tailoring the type of the modifier and in contrast to many of the commonly used methods it may be permanent. The development of this innovation is essentially based on the strong interdisciplinary co-operation between engineers and chemists.

Projektbeteiligte

Prof. Dr.-Ing. Günter Mennig
Technische Universität Chemnitz
Institut für Allgemeinen Maschinenbau und Kunststofftechnik
Professur für Kunststoffverarbeitungstechnik
Chemnitz

Prof. Dr.-Ing. Michael Gehde
Technische Universität Chemnitz
Fakultät für Maschinenbau
Institut für Allgemeinen Maschinenbau und Kunststofftechnik (IMK)
Professur Kunststoffe
Chemnitz

Prof. Dr. Gert Heinrich
Leibniz-Institut für Polymerforschung Dresden e.V.
Institut für Polymerwerkstoffe
Professur für Polymerwerkstoffe und Elastomertechnik
Dresden