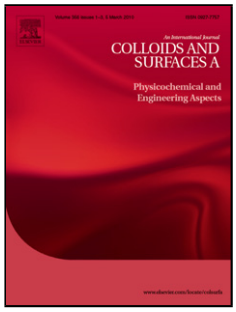

Title: Predicting the adhesion strength of thermoplastic/glass interfaces from wetting measurements

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PREDICTING THE ADHESION STRENGTH OF THERMOPLASTIC/GLASS INTERFACES FROM WETTING MEASUREMENTS

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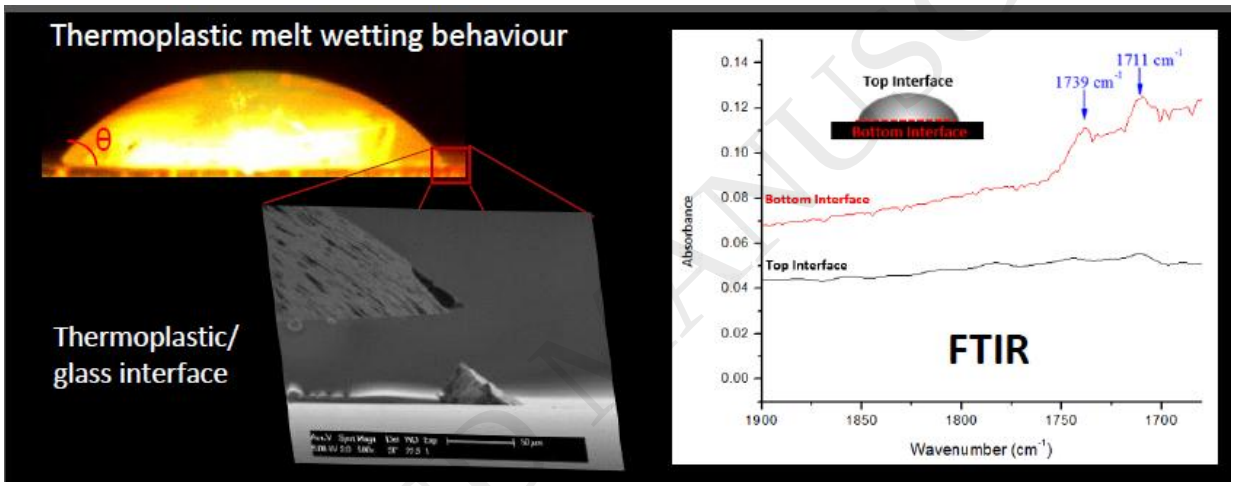
Graphical abstract



Abstract

To evaluate compatibility between a substrate and a thermoplastic polymer, the established methodology is to estimate their surface composition in terms of surface energy components, utilizing the results of contact angle measurements of probe liquids onto substrate and polymer surfaces at room temperature. Using this methodology, polymer surfaces are studied in solid state, however, during spreading of polymers on a substrate, polymers are in molten state and at high temperature, having different surface energies and more complex polymer/substrate interactions due to polymer chain mobility.

This paper presents a model study with practical relevance to predict polymer/substrate compatibility including contact angle measurements at high temperature directly performed between molten thermoplastics; polypropylene (PP), polyvinylidene fluoride (PVDF) and maleic anhydride-grafted polypropylene (MAPP), on smooth glass fibres and plates. The values of total surface energy of thermoplastics at high temperature (260°C)