

# **THE EXPERIMENTAL STUDY OF RELATIONSHIP BETWEEN RHEOLOGICAL AND INTERFACIAL STRENGTH OF THREE-LAYER POLYMER MELTS**

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Due to synergetic effects of combining individual polymers, multilayer films and conjugated fibers have been progressively gaining interest in the past decade. In the manufacture of multilayer products, it is a well known fact that the multilayer extrusion process is more economical than the conventional laminating process. These products are generally superior to their single component counterparts because of the combining materials with different properties into a single structure. This effect is readily observed in the food packing industry where packing films contain multiple layers, each of which contribute a specific barrier, mechanical or optical property to the resultant film. Interfacial instabilities that manifest themselves in form of traveling waves at the interface are the limiting factor in production of multilayer plastic structures. These interfacial waves result in a significant deterioration of the final product's properties of interest (i.e. barrier, mechanical, optical, etc.), hence to better design and control these processes a comprehensive understanding of the interfacial instability phenomenon is required. This would facilitate the selection of materials with suitable rheological properties, proper design of coextrusion die and proper selection of layer ratio within the structure.