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NATURAL RUBBER-TOUGHENED POLYAMIDE12 COMPATIBILIZED BY IN SITU REACTIVE PS/NR BLEND

Saravalee Saengthaveep[1,2] and Rathanawan Magaraphan[1,2,*]

[1]Polymer Processing and Polymer Nanomaterials Research Unit, The Petroleum and Petrochemical College, Chulalongkorn University, [2]National Center of Excellence for Petroleum, Petrochemicals, and Advanced Materials, Chulalongkorn University, Bangkok 10330, Thailand

**Email: Rathanawan.k@chula.ac.th*

In the production of rubber-toughened plastics, polyamide12 (nylon12)/natural rubber blend was prepared by melt blending in a twin-screw extruder. Generally, nylon12 and natural rubber are thermodynamically incompatible causing phase separation when they are blended. In this work, the polystyrene-natural rubber copolymer (PS/NR), made by free radical reaction to form in situ grafting of PS to NR, will be used as a compatibilizer to stabilize the morphology. In particular, the effect of the PS/NR compatibilizer content on the blend properties was investigated. The morphology of the blends was studied by a scanning electron microscope (SEM) and related to the mechanical properties.

For [Nylon12/NR] blend, the in situ formed PS/NR compatibilizer was successfully used as the compatibilizer to enhance impact and tensile properties at an optimum content of 10 phr. The improved mechanical properties of [Nylon12/NR]/PSNR blends could be attributed to the PS hard segment and NR crosslinking in PS/NR blend.