

عنوان مقاله:

Effect of Fiber Volume Fraction on Stress Distribution in Polypropylene Composites Reinforced by Glass and Carbon Fibers

محل انتشار:

کنفرانس بین المللی فرآورش پلیمرها (سال: 1390)

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خلاصه مقاله:

In this work, the stress distribution in fiber and matrix of the polypropylene base composites under the axial loading was studied, using numerical method. In this method, according to the two-dimensional symmetric, the distribution of stress was studied using ABAQUS software, to evaluate the strength of fiber and matrix. Two different reinforcing agents including carbon and glass fiber were used separately in polypropylene matrix in which the volume percent of fiber was varied from 1.5 to 15. The results of numerical method showed that, increasing fiber volume fraction caused to change variation of stress distribution along fiber length from parabolic to trapezoidal form. Comparison of the theoretical and experimental results showed a good agreement and they were in accordance with literature. It was shown also that numerical method can be use as a fast and easy method for prediction of mechanical behavior of .manufactured short-fiber reinforced composites with a good accuracy

کلمات کلیدی:

Polypropylene, glass fiber, carbon fiber, volume fraction, numerical simulation

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