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Abstract	:	The aim of this study was to investigate the modifications of the mechanical properties of polypropylene (PP) by incorporating elastomers, while considering the impact on its stiffness. Specifically, the research focused on determining the optimal loading of elastomer to achieve desirable properties and exploring the influence of these processes on the morphology and mechanical behavior of the prepared blends. Thermoplastic elastomers (TPEs) consisting of polypropylene and natural rubber (PP/NR) were prepared using a melt-mixing process, and the mechanical properties of the blends were evaluated. The stress-strain properties of the blends revealed a successful modification of PP, transforming it from a stiff and strong thermoplastic into a stiff and tough thermoplastic elastomer when 10% NR was included in the PP matrix. As the loading of NR increased, a reduction in tensile strength (TS) and modulus (E) of the blends was observed, while elongation at break (EB) increased. The flexural strength of unmodified PP was 45.9 MPa, which decreased with increasing NR loading. Similarly, the impact strength of unmodified PP was 25.8 KJ/m², whereas the values for 10%, 20%, 30%, and 40% NR inclusion were 30.8, 24.3, 20.6, and 15.2 KJ/m², respectively. The melt flow index (MFI) of unmodified PP was 14.1 g/10 min, while the values for 10%, 20%, 30%, and 40% NR inclusion were 19.4, 15.7, 11.6, and 10.2 g/10 min, respectively. The best combination of mechanical properties was observed at 10% NR inclusion in the PP matrix.