High Density Polyethylene (HDPE) – Elastomer (namely EPDM) composites have both practical and theoretical significance. In order to be able to utilize fully all the advantages offered by the mentioned composites, we must know the basic processes taking place during the formation of the phase structures and the most important factors influencing them.

In such composites, elastomer significantly increases impact strength. The properties can be varied in a comparatively wide range, which renders these materials versatile and suitable for diverse applications.

This kind of composites have complicated morphologies, which can feature a variety of crystalline and amorphous microstructures. Changes in these microstructures can greatly affect the mechanical properties of composites.

Determination of degree of crystallinity by the analytical techniques most commonly used for pure polymers (density and differential scanning calorimetry) is particularly difficult since, in the case of composites materials, exact knowledge of the polymer weight fraction is required.

Our study presents an alternative technique, namely ATR-FTIR spectrometric method for determination of the degree of crystallinity of the prepared HDPE-EPDM polymer composites. Also, the correlation between the crystallinity and the mechanical properties of the mentioned polymer composites are discussed.

References