

## A Study of the Effect of Iraqi Bentonite on Some Properties of Polymeric Blend

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### ABSTRACT

In this research The specimens of composite materials were prepared from matrix (polypropylene and polymethylmethacrylate)(80 /20) wt% in different weight fractions(3,6,9,12 &15)wt% and different particle sizes(45,60,70&110) $\mu$ m of Bentonite.

The results have shown that after the reinforcement with different weight fraction of Bentonite powder most mechanical properties such as hardness and modulus of Elasticity increase. Elongation decreases with an increase in weight fraction of (3, 6, 9, 12, 15) wt% and decrease with particle size decrease (45, 60, 70, 110)  $\mu$ m. Also the results have shown that the thermal stability of PP/PMMA increases with addition of Bentonite and the thermal stability of small particle size (45  $\mu$ m) was higher than larger particle size (110  $\mu$ m).

PP/PMMA/BN [(80/20/15) > (80/20/12) > (80/20/9) > (80/20/6) > 80/20/3].

The results have shown the diffusion coefficient (D) was increased with temperatures (30, 45, 60) C° and decreased with filler content (3, 6, 9, 12, 15) wt% increase.

The activation energy (E) increase with filler content (BN) increase and (E) increases with particle size of BN filler decrease.

Also the results have shown the addition of BN particles of PP/PMMA blend increases the discontinuity and restricts the growth of crystal therefore crystalline peak intensity is reduced in filler blend composite. Addition of large particle size of BN adversely affects the crystallization of PP.

دراسة تأثير البنتونايت العراقي على مخلوط بوليمري مكون من  
بولي بروسلين /بولي ميثاكريليت

### الخلاصة

النماذج للمواد المترابكة تم تحضيرها من خلط البولي بروبيلين بنسبة 80% والبولي ميثاكريليت بنسبة 20% مع مختلف النسب الوزنية من مسحوق البنتونايت وباحجام جسيمية مختلفة وبعد ذلك جرت دراسة بعض الخواص الميكانيكية والفيزيائية والحرارية وفحص البلورية ولجميع المترابكات المحضرة.