

## Investigation of PET Synthesis via Solution Polymerization Technique

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**P**oly (ethylene terephthalate) (PET) is a thermoplastic polyester commonly used in the industry owing to its good mechanical strength, thermal stability, high solvent resistance and low cost production. Depending on the application area, various molecular weight PETs are produced. (1)The initial step of PET synthesis is the formation of bis(hydroxyethyl) terephthalate (BHET) from the reaction between terephthalic acid (TPA) or dimethyl terephthalate (DMT) and ethylene glycol (EG) with metal catalysts. Terephthaloyl chloride (TPC) can also be used but it is not common as DMT and TPA (2)due to the HCl formation as by-product. (3)After BHET synthesis, polycondensation reaction is carried out at high temperature at melt phase where vacuum is also applied at the end of the process to increase the molecular weight. Although melt polymerization is feasible and widely used there are disadvantages of the system such as degradation of PET due to the long reaction time at high temperature and formation of side products, diethylene glycol. The aim of the current research is to synthesize PET by the reaction between TPC and EG in one step by solution polymerization. The effect of reaction conditions on the polymerization and the polymer properties are investigated.

### Biography:

Isil Yesil after completing her undergraduate program in Molecular Biology and Genetics at Bogazici University, she continued a master's degree in Chemistry at the same university. Since major interest areas are organic synthesis and analysis she attended a summer-term internship in R&D department at Eczacıbaşı Monrol Nuclear Products Company and continued as a part time employee for six more months. Currently she is doing solution and melt polymerization and working with polyesters in organic and polymer laboratory.