

## Effect of Graphene nanoplatelets on the polymerization of Aniline

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### Abstract

In this study in situ polymerization of aniline monomer in the presence of graphene nanoplatelets was investigated. The obtained results show that presence of graphene nanoplatelets decrease the enthalpy of polymerization reaction of aniline. Furthermore, the enthalpy of the polymerization decreases with increasing of graphene loading. The thermographs recorded during polymerization show that the induction time of the reaction decrease tangibly in the presence of graphene nanoplatelets. The SEM images show that polyaniline chains grow from the surface of graphene nanoplatelets. In fact, aniline molecules could absorb on the surface of graphene through  $\pi$ - $\pi$  stacking interactions or hydrogen bonding between carboxyl groups of graphene and amine groups of the aniline monomer [1]. On the other hand, polymerization of aniline/graphene was carried out in an ice bath. Four distinct regions could be recognized in the ice bath polymerization which corresponds to different mechanism involved. Moreover, the conductivity of Pani/Graphene nanocomposites was also investigated.

### References

[1] Z. Kachoei, S. Khoei, N. Sharifi Sanjani, Iranian Polymer Journal, **24** (2015) 203-217.