

عنوان مقاله:

Quartz Crystal Microbalance (QCM) as an efficient tool for studing UV stabilization of PVC by TiO₂ and CuO nanoparticles

محل انتشار:

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خلاصه مقاله:

In recent years, industrialization has necessitated the widespread use of polymers in many fields. Polymers due to their desirable properties such as high durability and flexibility and resistance to electric current and heat. have played their role well in construction, industrial, automotive, health and other applications. The studied polymer in this research is polyvinyl chloride, which is one of the most widely used polymers in the world after polyethylene. The main problem in the use of polymers is the destructive effect of sunlight on polymers used outdoors. fractures and cracks and formation of gypsum on the surface of polymers and financial losses and even in some cases, destruction of docks and aircraft fuselages can cause casualties of UV radiation of sunlight. In this paper, in order to increase the lifespan of PVC against UV radiation, TiO₂ and CuO nanoparticles in the polymer structure have been used. QCM is used as a mass sensitive sensor to study the stabilizing effect of metal oxide nanoparticles in PVC matrix. Results showed that both TiO₂ and CuO nanoparticles can enhance durability of PVC against UV degradation while CuO has .much better performance in this regard

کلمات کلیدی:

QCM, PVC, UV Resistance, TiO₂ and CuO nanoparticles

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