

## Abstract:

In this work it was used extracted lignin from oil palm empty fruit bunch by kraft delignification process as environmentally friendly photo-stabilizer of Poly (vinyl chloride) thin films. Up to date writing this paper, nobody has used this type of extracted lignin as PVC photo-stabilizer. Therefore this significant application was exhibited in this study by utilizing lignin as eco-friendly photo-stabilizer of PVC. Many approaches have been applied to test the efficiency of it as natural additive of PVC. Infrared spectra shows the growing of two specific bands during irradiation belong to carbonyl (C@O) and alkene (C@C) groups due to the photo-degradation. It was demonstrated that using lignin inhibits the formation of these two peaks substantially and stabilize the polymer. Various other experiments were done such as weight loss percentage, average molecular weight and surface study by AFM and SEM. All the results were in agreements and proved that lignin could be used as an excellent photo-stabilizer of PVC. Moreover it was demonstrated that increasing the concentration of lignin from 0.5% to 1% per polymer weight has increase the stability of PVC. It was also suggested the mechanism of stability hence lignin is highly aromatic and has a lot of phenolic hydroxyl groups which make it a very good UV-blocker and excellent free radical scavenger