

CHAPTER IV

CONCLUSION

Four chlorophenyl acrylates, pentachlorophenyl acrylate (PCPA), 2,4,6-trichlorophenyl acrylate (2,4,6-TCPA), 2,4,5-trichlorophenyl acrylate (2,4,5-TCPA) and 4-chloro-3-methylphenyl acrylate (4-Cl-3-MPA) , were synthesized with high percent yield. The literature search revealed that last three acrylates are novel compounds. Thus their corresponding copolymer with vinyl acetate are novel as well.

The four acrylate monomers were copolymerized with vinyl acetate at various monomer feeding ratio in benzene at 60°C using α,α' -azobisisobutyronitrile (AIBN) as the initiator

In order to analyze the number of the fungicidal monomer unit in the copolymer, the corresponding homopolymer were prepared by solution polymerization in benzene, except PCPA, the polymerization was carried out in methanol . During purification all the polymers were subjected to thin layer chromatography to monitor any fungicidal monomer which might be trapped in the polymer. The formation of all copolymers and homopolymers are confirmed by comparison of their infrared spectra with those of the corresponding fungicidal monomers. The absorption bands at 1630 cm^{-1} (C=C), 1330 and 900 cm^{-1} (CH_2 of olefinic end group) disappears.

In order to determine the monomer reactivity ratios the copolymer composition must be considered . In this research work, each copolymer composition was obtained by UV-Visible spectroscopic

technic. It was compared to the absorbance of the corresponding homopolymer.

The linearization method derived by Fineman and Ross (1950) was used to determine the monomer reactivity ratios. It reveals the monomer reactivity ratios for each pair of comonomers (Table 4.1)

Table 4.1 Copolymerization reactivity ratios

M_1	M_2	r_1	r_2
PCPA	VAc	2.18	0.02
2,4,6-TCPA	VAc	0.80	0.03
2,4,5-TCPA	VAc	0.981	0.035
4-Cl-3-MPA	VAc	0.808	0.01

It reveals that the chlorophenyl acrylate has much higher monomer reactivity ratios than vinyl acetate. This is due to the higher resonance stabilization of the chlorophenyl acrylates.

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย