

The EDA interaction of three acceptors, viz., (i) *o*-chloranil (i.e., 3,4,5,6-tetrachloro 1,2-benzoquinone), (ii) 2,3-dichloro naphthoquinone and (iii) [60]fullerene with the following donors has been studied in the present dissertation :

- (a) A series of phenols (phenol, catechol, resorcinol, *p*-quinol, α -naphthol and β -naphthol)
- (b) A series of polynuclear aromatic hydrocarbons (naphthalene, phenanthrene, anthracene, chrysene and pyrene)
- (c) N,N'-diphenyl thiourea .

These materials were purified as follows :

Purification of acceptors

o-chloranil : *o*-chloranil (Aldrich) was purified by sublimation before use . The reddish coloured product melts at 128°C .

2,3-dichloronaphthoquinone : It was collected from Sigma and was sublimed just before use . It melts at 196°C .

[60]Fullerene : It was collected from Sigma in pure form .

Purification of donors

Phenol : Phenol (b.p. 180°C) was distilled twice just before use.

Catechol : Catechol was purified by sublimation . It melts at 105°C .

Resorcinol : It was sublimed just before use . It melts at 111°C .

p-Quinol : It was purified by sublimation just before use . It melts at 173°C .

α -Naphthol : It was purified by sublimation just before use . It melts at 92°C .

β -Naphthol : It was purified by sublimation just before use . Its m.p. is 122°C .

Naphthalene: Commercial grade naphthalene was purified by recrystallisation from dry ethanol followed by sublimation . The sublimed product melts at 80°C .

- Phenanthrene: Phenanthrene from BDH was recrystallised from dry ethanol . It is a white crystalline powder, which melts at 99°C .
- Anthracene: Anthracene (Sigma) was purified by repeated crystallisation from dry ethanol followed by sublimation . It melts at 217°C .
- Chrysene: Chrysene was purified by recrystallisation from dried and purified benzene. The purified product melts at 255°C .
- Pyrene: Pyrene (Fluka brand) was purified by repeated crystallisation from dry alcohol and then sublimed . The product is white and melts at 150°C .
- N,N'-diphenyl thiourea : It was purified by recrystallisation from pure toluene . The white product melts at 152°C .

Purification of solvents :

- Dioxan: It was purified as follows: 40 ml of conc. HCl was added to 1 lit. of dioxan and air was passed through the mixture for 7 hours. Then an excess of solid KOH was added and kept overnight, the supernatant dioxan was filtered out and refluxed with metallic sodium for 5 hours and then distilled just before use . It boils at 101°C .
- Acetonitrile: It was dried over anhydrous CaCl₂ for 24 hrs. and then distilled just before use . It boils at 82°C .
- Carbon tetrachloride: It was dried over anhydrous CaCl₂ and then distilled just before use. It boils at 77°C .
- Methanol: Commercial pure methanol was first dried over lime and then distilled . It boils at 64°C .
- Ethanol: Commercial 'dehydrated alcohol' was first dried over lime and then distilled just before use. It boils at 78°C .
- Chloroform: It was shaken five times with half its volume of water . Separating the two layers the organic layer containing CHCl₃ was dried over CaCl₂ for two days and Distilled just before use. It boils at 61°C .

n-Hexane: It was dried over anhydrous CaCl_2 and then distilled just before use . It boils at 67°C .

n-Heptane: It was dried over anhydrous CaCl_2 and then distilled just before use. It boils at 98°C .

For photochemical experiments the intensity of the available UV-light source (360 nm) was measured by the method of potassium ferrioxalate actinometry as prescribed in 'Photochemistry' by J. G. Calvert and J. N. Pitts (John Wiley and Sons, New york , 1967), pp. 783-786 .

Absorption spectroscopic measurements were done on Shimadzu UV 160 A and UV 2101 PC model spectrophotometers fitted with TB 85 thermobath .

Emission spectra were recorded on a Hitachi F-4500 fluorescence spectrophotometer .