

Colour change functional dyes based on cross-conjugated donor-acceptor chromophores

SOOYOUNG, PARK. SEAWHA, OH. J. GRIFFITHS*

Korea Research Institute of Chemical Technology

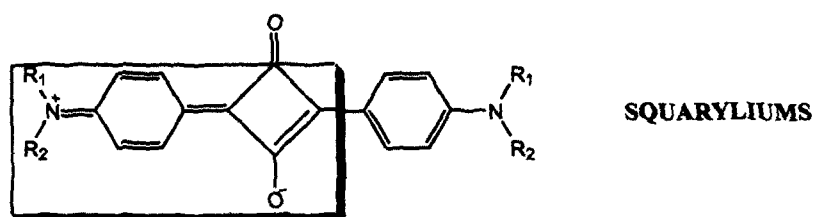
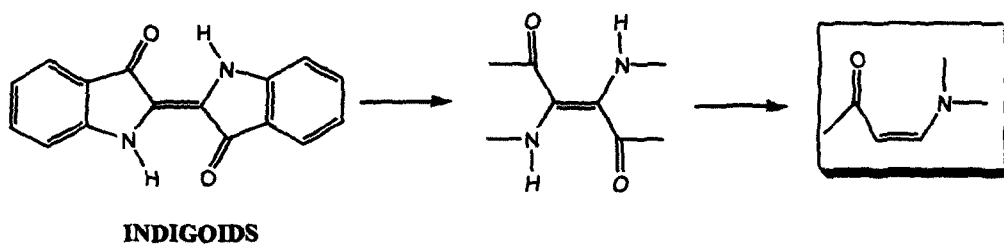
*Dept. of Colour Chemistry, Leeds, UK

Abstract—Some chromophores that can undergo a pronounced colour change when acted upon by an external agency, such as light, heat, pH, or chemical agents, have many potential applications as functional dyes. They may be used as indicators, optical sensors, biochemical probes, optical and thermal recording materials. This work will investigate donor-acceptor chromophores which have the potential for such colour change processes. In particular, cross-conjugated donor-acceptor chromophores, analogous to indigo and squarylium-type chromophores, will be examined for pH sensitizing and for their oxidation-reduction colour change behaviour.

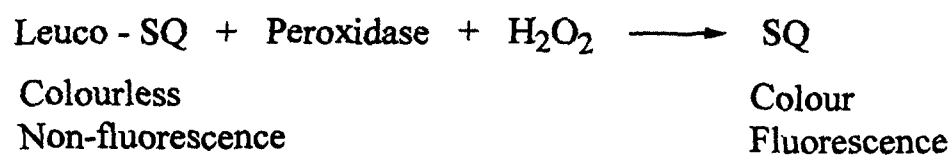
Objectives:

- To synthesise a range of cross-conjugated donor-acceptor chromophores, analogous to indigo and squarylium-typed chromophores
- To examine their colour change properties, particularly pH change and oxidation-reduction

Experiment: The basic cross-conjugated chromophore system consists of a C=C double bond substituted by two opposing donor groups and two opposing acceptor groups



Also, The leuco-squarylium dyes could be useful substrates for use in enzyme assays involving peroxidase enzymes



Conclusions:

- The leuco squarylium system represents a new branch of squarylium dye chemistry that has not been observed previously
- It opens up possibility of synthesis of new dye structures, and the preparation of peroxidase-sensitive reagents for biochemical analysis