Peer Reviewed Technical Journal Articles


Conference Proceedings and Book Chapters

Dissertation


Advisors: Prof. Harold S. Freeman, Ciba-Geigy Professor of Dyestuff Chemistry.

Project Goal: Molecular modeling design and synthesis of novel dyes resistant to light-induced fading. The paramagnetic, coloristic, and fastness properties of 2:1 Cr (III) and Fe (III) complex dyes were explained using MO theory. Molecular descriptors were identified that could be used to design new ligands which give brightly colored, fast, Fe (III) complex dyes. Disperse dyes for polyester that were resistant to fading by sunlight were also investigated. Based upon results from molecular modeling investigations, new dye structures were designed. Organic dye synthesis, purification, and analytical methods, (Magnetic susceptibility, NMR, MS, tlc, UV-Vis) were also utilized.

Patent Publications

Twenty US patents issued; additional patents in prosecution at this time.

Fields of invention include Diagnostics, Ink jet ink, Ink jet substrates, Cleaning, Nanotechnology, Triggered Release, Biotechnology, Functional dyes, and Water disinfection.

Selected patent publications:

USPN 8,617,874 “Array for Rapid Detection of a Micro-organism”
USPN 8,361,742 “Method for Detecting Candida on the Skin”
USPN 8,277,801 “Delivery System for Functional Compounds”
USPN 7,814,582 “System and Method for Monitoring Overflow Conditions in a Washroom”
USPN 7,531,319 “Array for Rapid Detection of a Microorganism”
USPN 7,399,608 “Microbial Detection and Quantification”
USPN 7,282,349 “Solvatochromic Bacterial Detection”
USPN 6,726,754 “Method for Enzyme-Mediated Removal of Gas from Inks”
USPN 6,780,893 “Stabilized Photoinitiators and Applications Thereof”
USPN 6,451,098 “High Dye Loading Ink Jet Inks with Improved Color Development on Textiles”
WO 03/71840 “Fluidized Bed Activated by Excimer Plasma and Materials Therefrom”

Trade Secrets (used in production) Field: Mixing Technology
Field: Dye Purification Technology