Abstract – Poster Presentation P17

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Anthrone-Benzothiazole Based Heterocyclic Disperse Azo Dyes: Synthesis, Dyeing, UV Protection Property, Anti-Bacterial Activity, and Computational Study

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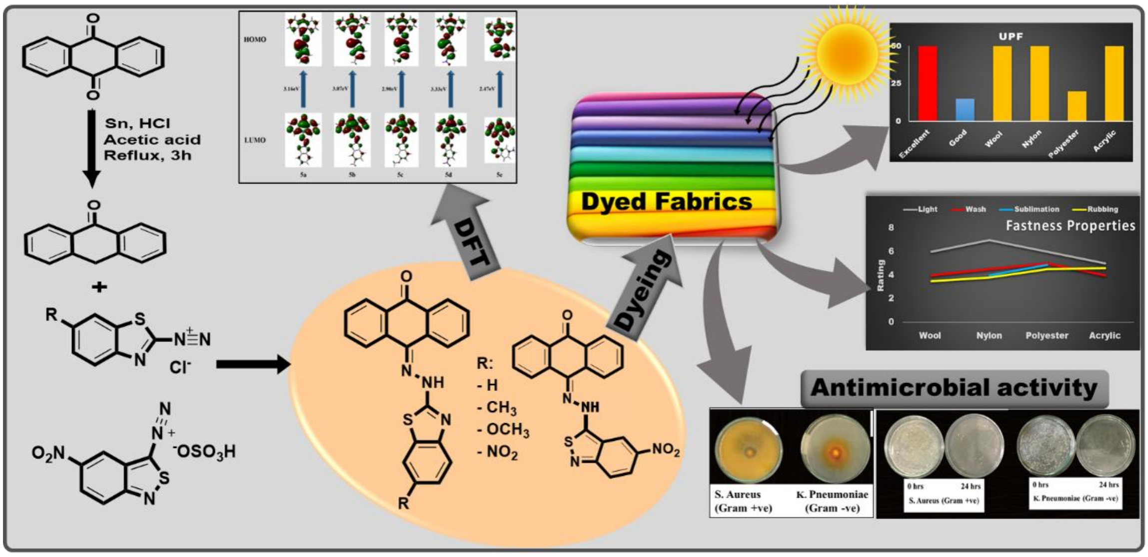
Abstract:

Anthrone and benzothiazole based disperse azo dyes (5a–5e) are synthesized and well characterized. These dyes are further applied to nylon, polyester, and acrylic fabrics. Fastness properties, including light, wash, and rub for dyed fabrics, were studied and found to be better for polyester and nylon than the acrylic substrate. Better sublimation fastness was obtained on polyester than nylon at 210 °C. The "ultraviolet protection factor (UPF)" of all dyed fabrics was detected to block ultraviolet radiation (UVR) in the range of 93 to 97 percent. Nylon and acrylic dyed fabric were excellent, while polyester showed good ultraviolet protection activity. All the dyes are effective towards "(S. aureus) gram +ve" and "(K. pneumoniae) gram −ve" bacteria. The textile dyed with the dye obtained from the diazotized 2-amino-6-methyl-benzothiazole and anthrone (5b) was found to have ≥99 % potent inhibition. The HOMO-LUMO energy gap and other quantum chemical descriptors such as softness, hardness, and electrophilicity index are obtained from the "density functional theory (DFT)" computations.

Figure/Scheme (if any):



References and Notes:

1. Patil P. S.*, Gupta P. O., Prof. Sekar N., Chemistry Select, 2022.