

Synthesis and Characterization of New Azastilbenes-Oxindole Conjugated Chromophoric Frameworks

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Abstract: We herein report the synthesis of conjugated chromophoric molecule possessing aza stilbenes and oxindole frameworks under catalyst-free condition by the reaction of 4-amino benzene sulfonic acid with isatin, 5-Bromo Isatin and 5-Iodo Isatin. All the newly synthesized compounds were well characterized by using different spectroscopic techniques like FT-IR spectroscopy, NMR spectroscopy. The developed method was found to be efficient, which have tolerated halogen functional groups. Furthermore the developed method afforded pure compounds just by a filtration process by skipping aqueous work-up extraction and column chromatography purification steps. The synthesized new azastilbenes-oxindole conjugated chromophoric frameworks possesses diverse functionality which might be useful for further chemical transformations to prepare a variety of libraries of derivatives desirable for a variety of applications..

Keywords: 4-Amino benzene sulfonic acid, Azastilbenes, Chromophore, Isatin, Push-Pull, Oxindole

REFERENCES

- [1]. I. D. W. Samuel and G. A. Turnbull, "Organic Semiconductor Lasers," Chem. Rev., vol. 107, pp. 1272-1295, Mar. 2007.
- [2]. Z. Fei, H. Ihmels, N. Kocher, C. J. Mohrschladt and D. Stalke, "Single Crystals of the Disubstituted Anthracene 9,10-(Ph₂P=O)S₂C₁₄H₈ Selectively and Reversibly Detect Toluene by Solid-State Fluorescence Emission," Angew. Chem. Int. Ed., vol. 42, pp. 783-787, Feb. 2003.
- [3]. K. Burgess, G. S. Jiao and L. H. Thoresen, "Fluorescent, Through-Bond Energy Transfer Cassettes for Labeling Multiple Biological Molecules in One Experiment," J. Am. Chem. Soc., vol. 125, pp. 14668-14669, Nov. 2003.
- [4]. S. N. Derrar, P. Derreumaux, K. Guemra and R. M. Sekkal, "Theoretical study on a series of push-pull molecules grafted on methacrylate copolymers serving for nonlinear optics," Int. J. Quantum Chem., vol. 112, pp. 2735-2742, Aug. 2012.
- [5]. Y. Chen, Z. K. Chen, Y. F. Dai, Y. Lin, D. G. Ma and T. L. Ye, "Oligofluorene-based push-pull type functional materials for blue light-emitting diodes," J. Photochem. Photobiol. A, vol. 230, pp. 55-64, Feb. 2012.
- [6]. K. S. An, J. W. Chung, Y. Lee, H. B. Moon, S. Y. Park, B. Singh and H. Yang, "Single-crystalline organic nanowires with large mobility and strong fluorescence emission: a conductive-AFM and space-charge-limited-current study," J. Mater. Chem., vol. 19, pp. 5920-5925, Sep. 2009.
- [7]. R. S. James and F. B. Paul, "Molecular Materials in Electronic and Optoelectronic Devices," Acc. Chem. Res., vol. 32, pp. 191-192, Feb. 1999.
- [8]. T. K. Achar, S. K. Manna and S. Mondal, "Recent advances in selective formaldehyde detection in biological and environmental samples by fluorometric and colorimetric chemodosimeters," Anal. Methods, vol. 13, pp. 1084-1105, Feb. 2021.
- [9]. V. Inbaraj and D. Udhayakumari, "A Review on Schiff Base Fluorescent Chemosensors for Cell Imaging Applications," J. Fluoresc., vol. 30, pp. 1203-1223, Jul. 2020.

- [10]. M. S. Akhter, M. Batool, F. W. Harun, H. M. Junaid and N. Shabbir, "Naked Eye Chemosensing of Anions by Schiff Bases," *Crit. Rev. Anal. Chem.* Sep. 2020 (in Press), <https://doi.org/10.1080/10408347.2020.1806703>.
- [11]. M. Sarkar, "A review on 2,6-diformyl-4-methylphenol derived schiff bases as fluorescent sensors," *Asian J. Chem.*, vol. 32, pp. 1837-1848, Jan. 2020.
- [12]. M. A. Balbino, A. S. Castro, J. W. Cruz, I. C. Eleuterio, J. M. T. Katayama, J. Magalhaes, M. F. M. Ribeiro, R. S. M. Silva, M. C. Tadini and E. N. Oiye, "Electrochemical Sensors Containing Schiff Bases and their Transition Metal Complexes to Detect Analytes of Forensic, Pharmaceutical and Environmental Interest. A Review," *Crit. Rev. Anal. Chem.*, vol. 49, pp. 488-509, Feb. 2019.
- [13]. V. D. Gupta, V. S. Padalkar, N. Sekar, A. B. Tathe and P. G. Umape, "Red emitting solid state fluorescent triphenylamine dyes: synthesis, photo-physical property and DFT study," *Dyes Pigm.*, vol. 97, pp. 429-439, Jun. 2013.
- [14]. L. Bu, W. Liu, M. Sun, Y. Wang, S. Xue, W. Yang, D. Zhang and M. Zheng, "Solid-state fluorescence properties and reversible piezochromic luminescence of aggregation-induced emission-active 9,10-bis[(9,9-dialkylfluorene-2-yl)vinyl]anthracenes," *J. Mater. Chem.*, vol. 1, pp. 2028-2035, Jan. 2013.
- [15]. H. Fukuoka, Y. Hagiwara, E. Miyazaki, T. Mizumo, Y. Oda, J. Ohshita and Y. Ooyama, "Solid-state fluorescence properties and mechanofluorochromism of D- π -A pyridinium dyes bearing various counter anions." *Tetrahedron*, vol. 69, pp. 5818-5822, Jul. 2013.
- [16]. B. Nawong, R. Pumsak and C. Suchada, "Five different colours solid-state fluorescence of azastilbenes:a new push-pull π -conjugated system," *Bull. Mater. Sci.*, vol. 38, pp. 791–795, May. 2015.
- [17]. S. Ciorba, E. L. Clennan, U. Mazzucato and A. Spalletti, "Induced phosphorescence of some aza- and thio-stilbenes embedded in thallium-exchanged zeolites," *J. Lumin.*, vol. 131, pp. 1193-1197, Jun. 2012.
- [18]. C. S. Choi, I. T. Kim, M. H. Kwak, K. H. Lee, S. W. Lee, K. S. Jeon and M. J. Yoon, "A Novel Fluorescent Dipyrido[3,2-a:2',3'-c]phenazine (dppz) Derivative Prepared by Amide Bonding," *Bull Korean Chem Soc*, vol. 27, pp. 1601-1603, Oct. 2006.
- [19]. T. Kawashima, N. Kano and J. Yoshino, "Fluorescence Properties of Simple N-Substituted Aldimines with a B-N Interaction and Their Fluorescence Quenching by a Cyanide Ion," *J. Org. Chem.*, vol. 74, pp. 7496-7503, Sep. 2009.
- [20]. D. H. He, Z. R. Yang and Y. C. Zhu, "Synthesis and optical properties of two novel stilbene derivatives containing 1,3,4-oxadiazole moiety," *Spectrochim. Acta A Mol. Biomol. Spectrosc.*, vol. 72, pp. 417-420, Mar. 2009.
- [21]. K. Fukunishi, M. Matsuoka and K. Shirai, "New syntheses and solid state fluorescence of azomethine dyes derived from diaminomaleonitrile and 2,5-diamino-3,6-dicyanopyrazine," *Dyes Pigm.*, vol. 47, pp. 107-115, Oct. 2000.