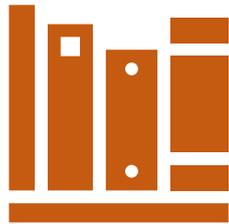


List of Publications & List of Conferences/ Seminars/ Workshops/ Webinars




List of Publications

<u>Related to Thesis</u>	
1.	Cholesterol based mesogenic Schiff's base derivatives with carbonate linkage: Synthesis, characterization and photoluminescence study Sagar K. Bairwa , Srujal A. Sonera & R. C. Tandel <i>Liquid Crystals</i> , 50(15), 2495–2509 DOI: 10.1080/02678292.2023.2260773 I.F.: 2.2
2.	Mesomorphic behaviour and photoluminescence study of novel homologous series of Schiff's base derived from cholesteryl carbonate and thiadiazole moiety Sagar K. Bairwa , Srujal A. Sonera & R. C. Tandel <i>Liquid Crystals</i> , 1–14 (2024) DOI: 10.1080/02678292.2024.2319631 I.F.: 2.2
3.	Synthesis and characterization of cholesterol-based Schiff's base derivatives containing thiazole moiety: Mesomorphic behaviour, biological evaluation, photoluminescence and DFT studies Sagar K. Bairwa , Srujal A. Sonera, N. D. Chavda & R. C. Tandel <i>Journal of Molecular Liquids</i> (Under Review - Manuscript Id: MOLLIQ-D-24-03746) I.F.: 6.0
4.	Synthesis, characterization and photophysical study of cholesterol functionalized azo-based biphenyl liquid crystals containing carbonate linkage (To be communicated)
5.	Synthesis, mesomorphic and fluorescent properties of 1,3,4-oxadiazole based unsymmetrical liquid crystals (To be communicated)
<u>Non-related to Thesis</u>	
6.	An efficient synthesis of some novel oxazolone derivatives showing cytotoxic activity Srujal Sonera, Sagar Bairwa & R. C. Tandel <i>Journal of the Iranian Chemical Society</i> , 21, 201–210 (2024) DOI: 10.1007/s13738-023-02918-3 I.F.: 2.4

7.	<p>Nematogenic homologous series of coumarin derivatives containing azomethine-ester linkages: synthesis, characterisation, photophysical and mesomorphic properties</p> <p>Srujal A. Sonera, Sagar K. Bairwa & R. C. Tandel</p> <p><i>Liquid Crystals</i>, 1-14 (2024)</p> <p>DOI: 10.1080/02678292.2024.2324462</p> <p>I.F.: 2.2</p>
8.	<p>Monoazo reactive dyes: Synthesis and application on cotton, silk and wool fibers</p> <p>MJ Patel, SA Sonera, SK Bairwa, RC Tandel</p> <p><i>Brazilian Journal of Science</i>, 3 (1), 175-182, 2024</p> <p>DOI: 10.14295/bjs.v3i1.479</p> <p>I.F.: -</p>
9.	<p>Trends in the synthesis and application of some reactive dyes: A review</p> <p>Patel M. J., Tandel R. C., Sonera S. A. & Bairwa S. K.</p> <p><i>Brazilian Journal of Science</i>, 2(7), 14–29</p> <p>DOI: 10.14295/bjs.v2i7.350</p> <p>I.F.: -</p>
10.	<p>BI-FUNCTIONAL REACTIVE DYES: A STUDY OF THEIR DYEING PROPERTIES ON COTTON FABRIC</p> <p>M.J. Patel, R.C. Tandel, S.A. Sonera & S.K. Bairwa</p> <p><i>European Chemical Bulletin</i>, 2023,12(4), 1528-1553</p> <p>DOI: 10.31838/ecb/2023.12.4.117</p> <p>I.F.: -</p>
11.	<p>Symmetrical homologous series of thiadiazole derivatives containing azomethine linkages: Synthesis, characterization and mesomorphic properties</p> <p>Srujal A. Sonera, Sagar K Bairwa & R. C. Tandel</p> <p><i>Molecular Crystals and Liquid Crystals</i></p> <p>(Under review – Manuscript Id: 238700911)</p> <p>I.F.: 0.7</p>


 Work presented in Conferences/ Seminars/ Workshops

<u>Conferences (Presented)</u>	
1.	<p>Synthesis and study of oxadiazole derivatives containing central amide linkage</p> <p><u>Sagar Bairwa</u>, Srujal Sonera and R.C. Tandel</p> <p>“INTERNATIONAL CONFERENCE ON RECENT PROGRESS IN CHEMICAL SCIENCES” (RPCS-2022)</p> <p>Organized by: Chemistry Department & IQAC, M. N. College, Visnagar, Gujarat, India from 22-23rd November, 2023</p>
2.	<p>Novel mesogenic 1,3,4-thiadiazole derivatives with azomethine and ester linkage: Synthesis, characterization and photoluminescence study</p> <p><u>Sagar K. Bairwa</u> & R.C. Tandel</p> <p>“NATIONAL CONFERENCE ON EMERGING TECHNOLOGIES IN CHEMISTRY & THEIR APPLICATIONS” (NCETCA-2023)</p> <p>Organized by: P.G. Department of Chemistry, Government college, Sirohi, Rajasthan, India from 19-20th October, 2023</p>
3.	<p>Synthesis, characterization and photoluminescence study of thiadiazole based liquid crystalline derivatives</p> <p><u>Sagar K. Bairwa</u> & R.C. Tandel</p> <p>“30th NATIONAL CONFERENCE ON LIQUID CRYSTALS” (NCLC-2023)</p> <p>Organized by: Department of Physics, Andhra University- Vishakhapatnam in association with <i>Indian Liquid Crystal Society</i> from 02-04th November, 2023</p>
4.	<p>Synthesis, characterization, photoluminescence and biological evaluation of some mesogenic 1,3,4-oxadiazole derivatives</p> <p><u>Sagar K. Bairwa</u> & R.C. Tandel</p> <p>“INTERNATIONAL CONFERENCE ON CHEMICAL AND BIOLOGICAL SCIENCES” (ICCBS-2024)</p> <p>Organized by: Atma Ram Sanatan Dharma College (University of Delhi) from 27th - 29th January, 2024</p>

Conferences (Attended)

- | | |
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| 5. | <p>International Conference on “9th Asian Network for Natural & Unnatural Materials” (ANNUM-9)</p> <p>Organized by: Department of Chemistry, University of Delhi, Delhi-India on 8th April, 2022</p> |
| 6. | <p>“International Conference on Advanced Materials and Applications” (ISAMA-2022),</p> <p>Organized by: Applied Physics Department & Applied Chemistry Department on 18th July 2022</p> |

Webinars/ e-workshops

- | | |
|----|--|
| 7. | <p>Webinar: National seminar on “Spectroscopic Techniques: A Tool for Structure Elucidation”</p> <p>Organized by: Department of Chemistry, Sophia Girls’ College (Autonomous), Ajmer from 21-22nd October, 2021</p> |
| 8. | <p>e-Workshop: on "Advanced Spectroscopy for Emerging Materials"</p> <p>Organized by: CSIR-National Physical Laboratory, New Delhi from 22-23rd December, 2021</p> |
| 9. | <p>e-Workshop: e-START Program “Chiral Sciences”</p> <p>Organized by: Hiroshima University, Orenburg State University, The Maharaja Sayajirao University of Baroda, University of Colorado at Boulder, University of Glasgow, University of Lyon 1, University of Wroclaw, and Zaragoza University dated 31st January, 2022</p> |

Workshop

- | | |
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| 10. | <p>One-week Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI) on</p> <p>“SPECTROMETRIC ANALYSIS AND IMAGING OF BIOLOGICAL SAMPLES”</p> <p>Organized by: Sophisticated Analytical and Technical Help Institute (SATHI), Banaras Hindu University and National Institute of Technology, Warangal from 25th April- 1st May, 2023 at Central Discovery Centre, BHU, Varanasi</p> |
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Awards and Achievements

Awards	
1.	<p>Third Best Poster Presentation Award at “INTERNATIONAL CONFERENCE ON RECENT PROGRESS IN CHEMICAL SCIENCES” (RPCS-2022)</p> <p>Organized by: Chemistry Department & IQAC, M. N. College, Visnagar, Gujarat, India from 22-23rd November, 2023</p>
2.	<p>Third Best Poster Presentation Award at “NATIONAL CONFERENCE ON EMERGING TECHNOLOGIES IN CHEMISTRY & THEIR APPLICATIONS” (NCETCA-2023)</p> <p>Organized by: P.G. Department of Chemistry, Government college, Sirohi, Rajasthan, India from 19-20th October, 2023</p>
Achievements	
3.	<p>Liquid Crystal image accepted for the month July-2023 and published as “<i>Featured ILCS liquid crystal artist, July 2023</i>” by the International Liquid Crystal Society</p> <p>(Link to the article: https://www.ilcsoc.org/art-contest/gallery/page-193/styled-11/page-197/)</p>



Published Research Articles

 LIQUID CRYSTALS
 2023, VOL. 50, NO. 15, 2495–2509
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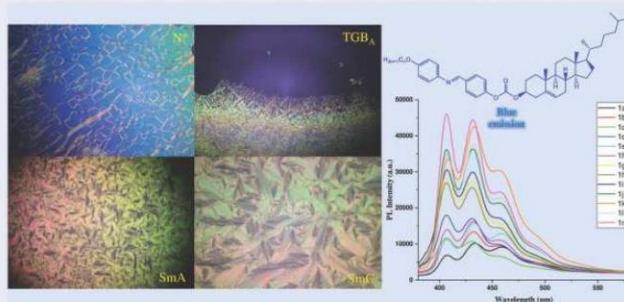

Cholesterol based mesogenic Schiff's base derivatives with carbonate linkage: Synthesis, characterisation and photoluminescence study

Sagar K. Bairwa, Srujal A. Sonera and R. C. Tandel

Applied Chemistry Department, Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda, Vadodra, India

ABSTRACT

The steroidal derivatives have been found to be extremely good mesogens since their origin. Due to their inherent chirality, they have the potential to induce a wide variety of liquid crystalline phases, including frustrated phases, depending on the structure of the steroidal skeleton and the substituents attached. In this report, thirteen new homologous Schiff's base derivatives were synthesised by condensing 4-n-alkoxy aniline with 4-formyl phenyl cholesterol carbonate. All the compounds were characterised using elemental analysis, FT-IR, ¹H-NMR and ¹³C-NMR. In order to study the liquid crystalline behaviour of the synthesised compounds, optical texture studies were carried out using polarising optical microscope in heating and cooling cycles. The derivatives showed a variety of mesophases, including chiral nematic (N*), twist grain boundary-A (TGB_A), smectic A (SmA) and chiral smectic C (SmC*) phases. The thermal behaviour was determined using a differential scanning calorimeter and thermogravimetric analysis. All the synthesised compounds are UV-active and show photoluminescence in the blue emission region with good quantum yield.

ARTICLE HISTORY
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KEYWORDS
 Cholesteryl carbonate;
 Schiff's base; mesogens;
 fluorescence; twist grain
 boundary – TGB_A
**1. Introduction**

Mesogens made of cholesterol are the first liquid crystals that have ever been discovered. Since they were the first species discovered more than a century ago and because their derivatives are probably the most studied mesogens, they continue to hold promise for fresh research in a variety of fields from the development of electronic devices to optical technology [1,2]. Cholesterol-based liquid crystals have gained considerable attention from researchers not only due to their natural and commercial availability but also because the helical supermolecular structure of cholesterol-based liquid crystals imparts some unique optical properties, such as selective reflection of circularly polarised light, high optical

rotatory power, circular dichroism and electro-optic effect [3]. Additionally, because these characteristics vary with variables like temperature, pressure and electric field, they might find use in optical storage, colour display technology, and full-colour rewritable recording systems [4–6].

The synthesis of different cholesteryl esters, ethers, carbonates, carbamates, etc. is made possible by the C3-hydroxyl group of cholesterol. These substances are frequently used in pharmaceuticals, the chemical industry, and toiletries and cosmetics [7]. Such molecules have a propensity to aggregate into sizeable three-dimensional structures in which the location and orientation of the molecule are organised due to both the stiff

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Mesomorphic behaviour and photoluminescence study of novel homologous series of Schiff's base derived from cholesteryl carbonate and thiaziazole moiety

Sagar K. Bairwa, Srujal A. Sonera and R. C. Tandel 

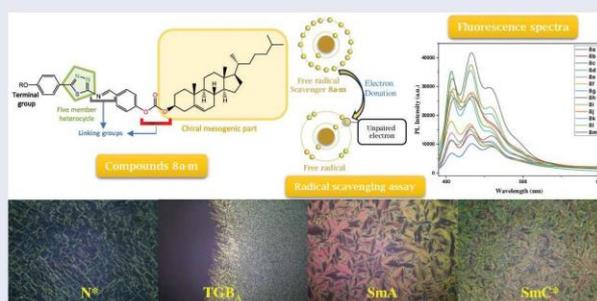
Applied Chemistry Department, Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda, Vadodra, India

ABSTRACT

The steroidal derivatives are widely known for their ability to display a variety of mesophases, including frustrated phases, depending on the structure of the steroidal skeleton and the substituents attached. In this report, thirteen new homologues Schiff's base derivatives were synthesised by condensing 4-formyl phenyl cholesteryl carbonate with 5-(4'-n-alkoxy phenyl)-2-amino-1,3,4-thiaziazole. All the synthesised derivatives were characterised using elemental analysis, FT-IR, ¹H-NMR and ¹³C-NMR. Optical texture studies were carried out using a polarising optical microscope in heating and cooling cycles to examine the liquid crystalline behaviour of the synthesised compounds. The derivatives displayed a variety of mesophases, including chiral nematic (N*), twist grain boundary-A (TGB_A), smectic A (SmA) and chiral smectic C (SmC*) phases. The isotropic temperature of all the compounds within the homologous series seems to decline with the increase in carbon numbers on flexible chains. The thermal behaviour of all the synthesised compounds was checked using differential scanning calorimetry and thermogravimetric analysis. All the synthesised compounds are UV-active and exhibit photoluminescence in the blue emission band with a remarkable quantum yield. The radical-scavenging activity of the synthesised mesogenic derivatives was also evaluated using the DPPH assay.

ARTICLE HISTORYReceived 14 December 2023
Accepted 13 February 2024**KEYWORDS**

Thiaziazole; Schiff's base; cholesteryl carbonate; twist grain boundary; photoluminescence

**1. Introduction**

Cholesterol, a natural sterol molecule, is an essential component of cell membranes and is required for preserving their fluidity and integrity [1]. The ability of cholesterol and its derivatives to form liquid crystalline phases has been widely investigated. Along with improving stability and self-assembly behaviour, adding cholesterol to liquid crystal systems also offers unique features coming from the cholesterol moiety. Cholesterol-based liquid crystals offer several advantages over conventional liquid crystals, including enhanced mesophase stability due to the rigid and

steroidal structure of cholesterol, allowing for the formation of well-defined liquid crystalline phases over a wide temperature range and also the stronger intermolecular interactions that lead to improved ordering and phase transition characteristics [2]. Depending on the structure of the steroidal skeleton and the substituents attached, they can form a wide variety of liquid crystalline phases, including frustrated phases [3,4]. Typically, frustration of phases occurs predominantly in chiral systems with substantial enantiomeric excess and strong molecular chirality, especially with a short pitch. Despite the extensive reporting of over 3000

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ORIGINAL PAPER



An efficient synthesis of some novel oxazolone derivatives showing cytotoxic activity

Srujal Sonera¹ · Sagar Bairwa¹ · R. C. Tandel¹ 

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Abstract

Over the past few decades, oxazolones have shown promising results due to their biological behavior. The purpose of this study is to synthesize novel oxazolone derivatives possessing antimicrobial and cytotoxic activity. In the present study, two novel series of oxazolone derivatives were synthesized. In Scheme-1, p-substituted benzoyl glycines was fused with 4-n-octyloxy-3-methoxybenzaldehyde to yield corresponding oxazolone derivatives (1–6). In Scheme-2, 4-n-alkoxybenzoyloxybenzaldehydes were fused with 4-n-butyloxybenzoylglycine to yield the novel oxazolone (azlactone) compounds (1'–4'). The TLC was used to assess the purity of the synthesized compounds. All the compounds were characterized using elemental analysis, FT-IR and ¹H NMR. All the compounds were screened for their in vitro antibacterial activity against *Escherichia coli* and *Micrococcus luteus* showing good to moderate antibacterial activity as compared to the standard streptomycin. The cytotoxicity of the prepared compounds was assessed using a seed-infusion technique. All the synthesized compounds are non-mesogenic in nature as observed using a polarizing optical microscope.

Keywords Oxazol-5-one · Azlactone · Cytotoxicity · Mesomorphic

Introduction

There are heterocyclic compounds in both natural and man-made forms. It also has a variety of biological functions and is vital to human survival. Azlactone (Oxazolone), which falls under the general category of heterocyclic compounds, is one of the five-membered heterocyclic compounds with a variety of therapeutic uses [1]. New medicinal compounds have been discovered using a variety of techniques. Oxazolone moieties were synthesized using such techniques. Oxazolone was a versatile compound that demonstrated a variety of biological actions and was extremely beneficial in both research and industrial applications. The molecule contained numerous reactive sites that facilitate a variety of applications in the fields of chemistry, biology, and material science. The 4-arylidene-2-phenyl-5(4H)-oxazolone, a significant family of five-membered heterocyclic moiety with nitrogen and oxygen as heteroatoms in its structure, was

created and first reported in 1893 by Friedrich Gustav Carl Emil Erlenmeyer [2]. According to published research, Oxazolone's C-2 and C-4 locations are important for a number of biological functions [3]. Other chemical compounds, such as N-substituted pyrroles, amino acids, -acyl-amino alcohols, thiamine, amides, peptides, and other heterocyclic precursors, were also synthesized using oxazolones as an intermediary [4–6]. It is essential to use heterocyclic compounds with hetero atoms of oxygen, nitrogen, and sulphur in five- and six-membered ring structures. The five-membered heterocyclic molecule oxazolone comes in two isomeric forms depending on where the double bond is located and one isomeric form depending on where the carbonyl group is located [7].

Oxazolones also exhibit biological action, including antimicrobial [8–10], anti-inflammatory [11–13], anti-cancer [14, 15], anti-HIV [15–17], antiangiogenic [18], anticonvulsant [19], sedative [20–22], antibacterial, and cardiotoxic effects [23, 24]. These oxazolone compounds have been applied as biosensors, immunomodulators, and synthons [25–27]. Figure 1b, c, d indicate some examples of oxazolone (azlactone) moiety which shows some biological activities.

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Nematogenic homologous series of coumarin derivatives containing azomethine-ester linkages: synthesis, characterisation, photophysical and mesomorphic properties

Srujal A. Sonera, Sagar K. Bairwa and R. C. Tandel 

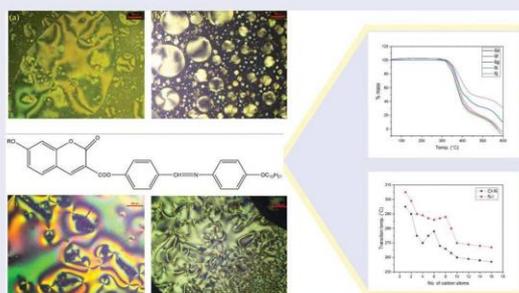
Applied Chemistry Department, Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda, Vadodara, India

ABSTRACT

Novel Homologous series of coumarin based Schiff's base derivatives derived from 4'-formyl phenyl 7-n-alkoxycoumarin-3-carboxylate and 4-n-(decyloxy)aniline have been synthesised. The proposed structures of all the newly prepared compounds were confirmed by FT-IR, ¹H-NMR, ¹³C-NMR and elemental analysis. The photophysical properties of the coumarin based Schiff's base derivatives have been studied. The textures of coumarin based Schiff's base derivatives and their transition temperature were observed and recorded under a polarising optical microscope. The enthalpy change data were measured using Differential Scanning Calorimetry. By varying the alkoxy group ($n = 1-10, 12, 14, 16$) at the terminal position at one end of the moiety, the nematic phase was observed on heating as well as cooling. The thermal stability of all the compounds was recorded using thermal gravimetry analysis.

ARTICLE HISTORYReceived 17 August 2023
Accepted 25 February 2024**KEYWORDS**

Mesomorphic; coumarin; nematic; Schiff's-base

**Introduction**

In recent years, enhancements in the research of coumarin derivatives have been found due to its wide range of applications in the field of organic light emitting diodes (OLEDs) [1,2], light harvesting materials [3], chemosensors [4–7], photorefractive materials [8], non-linear optical materials [9,10] and photo alignment of mesomorphic material possessing photochemical and photophysical properties [11–14]. Coumarin moiety is considered a very essential component due to its polarity and a significant dipole moment (5.48 D) and is hence responsible for mesomorphic as well as electronic properties [15]. Coumarin derivatives have a very wide range of applications in biological and display systems

[16]. Different linking groups such as ester, imine, etc. at the core position of the moiety enhance the mesomorphism [15,17–23]. Yan Li, et.al have developed novel heterocyclic mesomorphic compounds comprising of smectic and nematic phases [24].

Coumarins were considered as a very essential component and are used in the synthesis of drugs due to its various characteristics that includes high solubility and low molecular weight [25–27]. Numerous pesticides [28] and dietary additives [29] contain coumarin in their structural makeup. Numerous significant photophysical characteristics of coumarin containing compounds make them useful molecules for fluorescent sensors, optical devices, fluorescence dyes, laser dyes, organic light-

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Monoazo reactive dyes: Synthesis and application on cotton, silk and wool fibers

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Abstract

Mono azo reactive dyes are mostly used in textiles industries. The current study was developed to synthesize and apply mono azo reactive dyes. The primary goal of this research article is to highlight synthesized dyes with outstanding fixing properties for the dyeing and printing sectors to invent in future. Diazotized o-anisidine was coupled with several 4-amino-4'-hydroxy benzilidene acetophenone cyanurated coupling component including H-acid, Gamma acid, J-acid, N-methyl J-acid, N-phenyl J-acid, K- acid and peri acid, to create a variety of monoazo reactive dyes. IR and elemental analyses were used to describe them. Moreover, the dyeing capabilities of each of these dyes on silk, wool, and cotton have been evaluated. The wet fastness properties also evaluated. Synthesized mono azo reactive dyes have excellent fixation values as well as fastness properties.

Keywords: synthesis, monoazo reactive dyes, application, cotton, silk, wool, fixation, fastness.

Corantes reativos monoazo: Síntese e aplicação em fibras de algodão, seda e lã

Resumo

Os corantes reativos monoazo são usados principalmente nas indústrias têxteis. O presente estudo foi desenvolvido para sintetizar e aplicar corantes reativos mono azo. O objetivo principal deste artigo de pesquisa é destacar corantes sintetizados com excelentes propriedades de fixação para os setores de tingimento e estampa investirem ainda mais. A o-anisidina diazotizada foi acoplada a vários componentes de acoplamento cianurados de 4-amino-4'-hidroxil benzilideno acetofenona, incluindo ácido H, ácido gama, ácido J, ácido N-metil J, ácido N-fenil J, ácido K e peri ácido, para criar uma variedade de corantes reativos monoazo. Análises elementares de IR e nitrogênio foram usadas para descrevê-los. Além disso, as capacidades de tingimento de cada um desses corantes em seda, lã e algodão foram avaliadas. As propriedades de resistência à umidade também foram avaliadas. Os corantes reativos monoazo sintetizados têm excelentes valores de fixação, bem como propriedades de solidez.

Palavras-chave: síntese, corantes monoazoreativos, aplicação, algodão, seda, lã, fixação, solidez.

1. Introduction

The most prevalent type of dye for cellulosic fibres is reactive dye. Bifunctional reactive dyes are often utilized because they are simple to use. Reactive dyes have a fairly straightforward structural makeup (Patel; Patel, 2010). Many unique structures have been found that are beneficial in commercial applications to wool, silk, and cotton as well as their mixes with other fibres, and the structural creation of new reactive dyes has been a topic of research (Manoj et al., 2022). Due to their formation of chemical bonds with the textile fibre, reactive dyes have high wet-fastness.

Reactive dyes are easy to wash out of the non-fixed areas, which are a prerequisite for dyeing and have an efficient use. They should be highly reactive, generate strong yields, and have created high levels of fixing, particularly in dyeing (Wei et al., 2019; Patel; Tandel, 2022). When o-anisidine was diazotized and coupled with

Trends in the synthesis and application of some reactive dyes: A review

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Abstract

From last 25 years that many researchers have developed the novel reactive dyes with modification in structure of reactive dyes. In the present review paper concentrated development of reactive dyes. The review paper is focused on the highlight such dyes have having excellent dyeing properties and wet-fastness properties. This review paper express the monstrous impression of reactive dyes on the textiles coloration industry. Particularized details are given regarding evolution in the chemistry of reactive structure systems. It is additionally mentioned pointed out that advance research is mandatory to enhance dye fixation and wet-fastness properties. Reactive dyes have been used for the past hundred years for dyeing of cellulosic fabrics. A reactive dye has a chromophore, which is a group or an atom that is responsible for the dye's colour. It has a component which reacts with the fabric or substrate. They have excellent fastness features due to the presence of covalent bonds that takes place during dyeing. The dyeing industry is dominated by the parties who can create dyes having excellent dyeing efficiency, stable, can be resistant to chemical actions and be affordable. In this review on development of synthesis reactive dyes has been provided. This review paper concentrated on research of reactive groups type.

Keywords: reactive dyes, synthesis, cotton, fixation, fastness.

Tendências na síntese e aplicação de alguns corantes reativos: Uma revisão

Resumo

Nos últimos vinte e cinco anos, muitos pesquisadores desenvolveram novos corantes reativos com modificações na estrutura dos corantes reativos. No presente artigo de revisão, concentrou-se o desenvolvimento de corantes reativos. O artigo de revisão está focado no destaque que tais corantes têm com excelentes propriedades de tingimento e propriedades de resistência à umidade. Este artigo de revisão expressa a impressão monstruosa de corantes reativos na indústria de coloração têxtil. Detalhes particulares são dados sobre a evolução na química de sistemas de estrutura reativa. Além disso, é mencionado que pesquisas avançadas são necessárias para melhorar a fixação do corante e as propriedades de resistência à umidade. Os corantes reativos têm sido usados nos últimos cem anos para tingir tecidos celulósicos. Um corante reativo tem um cromóforo, que é um grupo ou átomo responsável pela cor do corante. Tem um componente que reage com o tecido ou substrato. Possuem excelentes características de solidez devido à presença de ligações covalentes que ocorrem durante o tingimento. A indústria de tingimento é dominada pelas partes que podem criar corantes com excelente eficiência de tingimento, estáveis, resistentes a ações químicas e acessíveis. Nesta revisão, o desenvolvimento de corantes reativos de síntese foi fornecido. Este artigo de revisão concentrou-se na pesquisa do tipo grupos reativos.

Palavras-chave: corantes reativos, síntese, algodão, fixação, solidez.

1. Introduction

The highly successful class of synthetic dyes are reactive dyes due to ease of application, excellent wet-fastness

Bi-functional reactive dyes: A study of their dyeing properties on cotton fabric

Section A-Research paper

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BI-FUNCTIONAL REACTIVE DYES: A STUDY OF THEIR DYEING PROPERTIES ON COTTON FABRIC

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Sagar K. Bairwa ¹

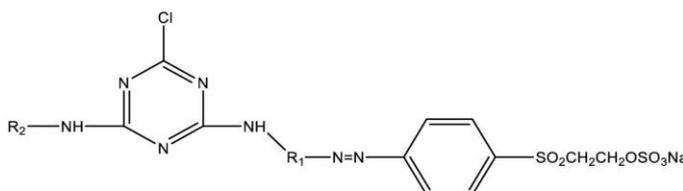
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Abstract

Bifunctional reactive dyes were examined considering new reactive dyes fixation with wet fastness properties on to cotton fiber. The bi-functional reactive dyes along various groups 4-(β-sulfatoethylsulfonyl) aniline were studied on to cotton fabric with exhaust dyeing method to investigate the performance of groups on fixation of shades, tone and wet fastness behavior. The bi-functional reactive dyes synthesized by the coupling of diazotized 4-(β-sulfatoethylsulfonyl) aniline by different cyanurated coupling components in good yield. These dyes were characterized by FTIR, ¹H NMR spectroscopic elemental analysis. Colorimetric data (L*, a*, b*, C*, H*, K/S) have been studied. The dye with various position of groups has individual affectability and affinity to the used cotton material. Synthesized bi-functional dyes performed good fixation at most favorable settings of temperature, pH and dyeing time were studied. Colorimetric data and K/S have also been investigated.

Graphical Abstract

Structure bifunctional reactive dyes

Keywords: Bi-functional Reactive dyes, Cotton, Structure of dyes, Exhaust, Fastness properties.

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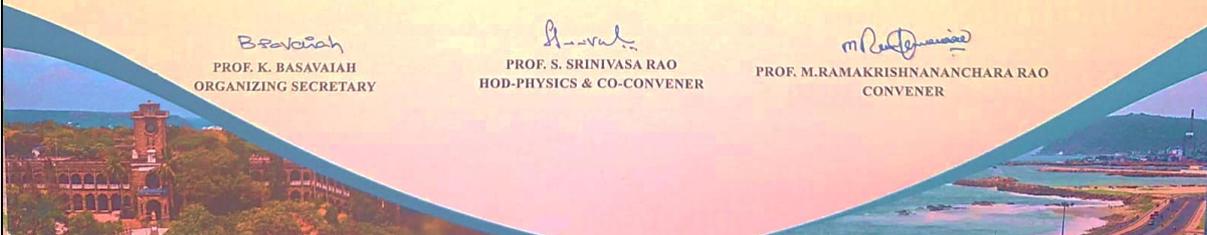
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CSIR - NATIONAL PHYSICAL LABORATORY
Dr. K.S. Krishnan Road, New Delhi-110012 INDIA

E-Workshop on "Advanced Spectroscopy for Emerging Materials"
December 22nd- 23rd, 2021, CSIR-NPL, New Delhi, INDIA

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January 31, 2022

Date



KANEKO Shinji, Ph.D.
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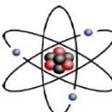

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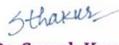
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5/12/24, 12:55 PM

July 2023 artist | ILCS

ILCS (<http://ilcsoc.org/>)

The International Liquid Crystal Society

Sagar Bairwa, featured ILCS liquid crystal artist, July 2023



He is currently pursuing PhD at Applied Chemistry Department, The Maharaja Sayajirao University of Baroda, Vadodara, India under the guidance of Prof. R. C. Tandel. His work includes the design, synthesis, photo physical properties and biological evaluation of bent shaped and calamitic mesogens with heterocyclic moiety. His main focus is to study the effect of terminal alkyl chain, lateral substitution and also the photoluminescent properties.

Contact Information:

Google Scholar: <https://scholar.google.com/citations?user=mYySgvAAAAAJ&hl=en>

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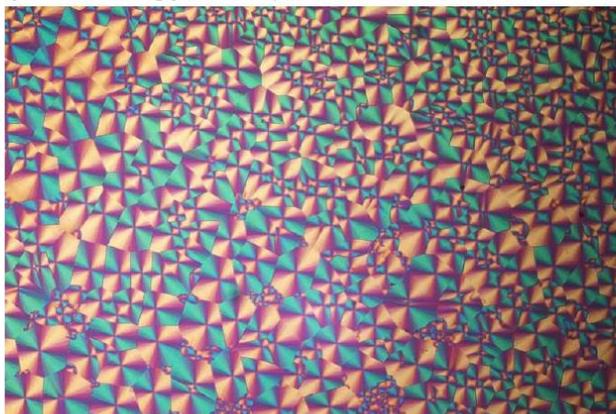
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This Smectic-A phase was observed in 4,4'-alkoxy benzylidene amino phenyl cholesteryl carbonate. This specific image was observed for 4-n-decyloxy aniline derivative. Upon cooling from isotropic melt first the formation of a chiral nematic mesophase takes place which on further cooling generates the focal conic textures of Smectic-A phase (~ 220°C). The sample was sandwiched between the untreated glass slides and observed under the cross polarizer in heating and cooling cycles. The size bar of the image is approximately 500 μm.



Jury (./. /. /. /. /. /art-contest/jury/) comment: The photo shows once again how liquid crystals combine science and artistic aspects, so the picture is very attractive from an aesthetic and artistic point of view.

