

# AG & SG SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE

Vuyyuru – 521 165

Autonomous -Re-accredited at 'A' by the NAAC - ISO 9001 - 2015 Certified



## REVIEW ON KEY PERFORMANCE INDICATORS

### 1.0 PROFILE OF THE FACULTY

Name of the Faculty:	First Name	Middle Name	Last Name
	SREERAM		VENIGALLA
Name of the Department:	CHEMISTRY		
Designation:	HEAD & LECTURER		
Qualification:	Degree	PG	Doctoral
			√
DoB:	Date	Month	Year
	18	06	1982
Total Experience:	Years	Months	
	17	06	
Experience in the College:	Date of joining in this institution	Years	Months
	01-07-2008	14	05
Adhaar No:	263050669759		
Contact:	Number	Mail ID	
	9490933766	sreeramvenigalla2008@gmail.com	

### 2.0 PASS PERCENTAGE (Only Theory Courses)

Academic Year	Odd sem	Course code	Pass %	Even Sem	Course code	Pass %
2021-22	I	20CH1T3	90.9	II	20CH2T1	100
	III	20CH3T1	100	IV	20CH4T1	86.3
	Average					
2020-21	I	20CH1T3	81.8	II	20CH2T1	81.8
	III	OCH301	37.5	IV	Project	100
	Average					
2019-20	I	OCH103	100	II	OCH201	40.6
	III	OCH301	96.6	IV	Project	100
	Average					

### 3.0 FEEDBACK

Academic Year	Odd sem	Course code	Feedback	Even Sem	Course code	Feedback
2021-22	I			II		
	III			IV		
	V			VI		
2020-21	I			II		
	III			IV		
	V			VI		
2020-21	I			II		
	III			IV		
	V			VI		

### 4.0 ACADEMIC IMPROVEMENT/ACHIEVEMENTS

#### 4.1 Seminars / Conferences/ Workshops / Extension Activities / Webinars / OthersOrganized

A.Y.	Title	College / Regional/State/ National/International	Duration
2019-20	1.Separation techniques by Chromatographic methods(STCM-2020)	National level	Two days
	2.Plastics Recycling techniques on Waste management		
2020-21	Guest lecture- Mass spectrometry and its applications	College	One day
2021-22	1. Green chemistry for better environment.	National level	One day
	2. Principles of Organic Spectroscopy and its Applications	E-Conference	One day
	3. Research Methodology –An Interdisciplinary Approach	National Work Shop	One day



#### 4.2 Seminars / Conferences/ Workshops / Extension Activities / Webinars / Others Attended

A.Y.	Title	Regional/ State/ National/International	Institution Organized	Duration
2019-20	Details Enclosed			
2020-21	Details Enclosed			
2021-22	Details Enclosed			

#### 4.3 ICT Usage

A.Y.	Videos	e-content	PPTs and others
2019-20			Organic Spectroscopy
2020-21			Organic Spectroscopy
2021-22			Organic Spectroscopy

#### 4.4 Knowledge Acquisition

A.Y.	Certificate Programmes (Online Courses- NPTEL, SWAYAM, etc) others acquired	FDPs/FOPs participated
2019-20	----	
2020-21	-----	FDP-03
2021-22	-----	FDP-02

#### 4.5 Awards/Memberships

A.Y.	Awards	Memberships	Special Recognition
2019-20	----	-----	-----
2020-21	-----	-----	-----
2021-22	-----	-----	-----

### 5.0 RESEARCH& CONSULTANCY

#### 5.1 Journal Papers\*

Indexing by	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
SCIE / Web of Science		01	
Scopus	01		01
UGC Care Listed			
Other Peer reviewed publications		01	

## 5.2 Conference Papers\*

Indexing by	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Web of Science /Scopus /UGC listed/ others	-----	-----	-----

## 5.3 Books/ Book Chapters\*

Indexing by	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Web of Science /Scopus/ reputed Publisher			01

## 5.4 Patents\*

	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Published	---	----	----
Granted	----	-----	-----

## 5.5 Publications with UG& PG students\*\*

Indexing by	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Web of Science/Scopus (X)	-----	-----	-----
UGC Care Listed	-----	-----	-----
Others	-----	-----	-----

\*Author name upto 3<sup>rd</sup> position only to be considered

\*\*Author name immediately after students only to be considered

## 5.6 Research Guidance

Research Guidance	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
No of Scholars	-----	-----	-----
No. of Ph.Ds Awarded	-----	-----	-----

## 5.7 External Funded R&D Projects (Research projects sanctioned or Applied)

A.Y	Title of the Project	Amount	Funding Organization
2019-20	-----		
2020-21	-----		
2021-22	-----		

## 5.8 Consultancy

A.Y	Name of the organization	Nature of Work	Amount Collected
2019-20	-----	----	-----
2020-21	-----	----	-----
2021-22	-----	----	-----



## 6.0 ADMINISTRATIVE SUPPORT

### 6.1 Institute Level Administrative Responsibility

A.Y	Nature of Responsibility	Outcome
2019-20	Research Committee Convenor	Increased No.of Publications of Our College faculty.
2020-21	IQAC Coordinator & Critreion-II Coordinator & Research Committee Convenor	Sucessfully Submitted AQAR in New Format.
2021-22	Critreion-II Coordinator & Research Committee Convenor	Increased No.of Publications of Our College faculty.

### 6.2 Department Level Administrative Responsibility

A.Y	Nature of Responsibility	Outcome
2019-20	Head of the Department	1. Student Strength increased 2. Results were improved 3.Student Placements are Increased.
2020-21	Head of the Department	
2021-22	Head of the Department	

## 7.0 STUDENT SUPPORT

### 7.1 Support To Students Participation

Activity	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Regional competitions	----	Pg Chemistry Final Year Girl Students are won the 3 rd Prize in poster presentation in P.B. Siddhartha College, Vijayawada	-----
National competitions	----	-----	-----
International competitions	----	-----	-----
Others(Specify)	Industrial Visit 1.KCP & IC Sugars 2.CIPET, Vijayawada	Industrial Visit -- 1.Nifty Labs,Kondapalli	-----

## 7.2 Innovation, Incubation And Start-Ups

A.Y	Details of Innovation, Incubation/Start-ups	Impact/Outcome
2019-20	-----	-----
2020-21	-----	-----
2021-22	-----	-----

## 8.0 OTHER CONTRIBUTIONS

### 8.1 Funds Received From Outside Organization

A.Y	Name of Scheme	Name of the Investigators	Amount	Funding Organization	Resource Person's Name and address
2019-20	-----	-----	-----	-----	-----
2020-21	-----	-----	-----	-----	-----
2021-22	-----	-----	-----	-----	-----

### 8.2 Industry Institute Interaction


Activity	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
MoUs	One-Bio technical services	One- C R Reddy college	<ul style="list-style-type: none"> <li>Bio technical services</li> <li>Sir C R Reddy college, Eluru</li> <li>ANR College Gudivada</li> <li>Govt. Degree College, Avanigadda.</li> </ul>
Internships/ Projects	Student projects in IV Semester	Student projects in IV Semester	Student projects in IV Semester
Placements	10	18	14
Centre of Excellence			

### 8.3 Interaction With Other Institutions

Activity	A.Y (2019-20)	A.Y(2020-21)	A.Y(2021-22)
Acted as resource person in FDP/Workshops/ Guest Lecture/Keynote Speakers	Guest lecture on "IR spectroscopy" to UG Chemistry students, ANR College.	-----	-----
Board of Studies	ANR College, Gudivada	1. SKSD Mahila kalasala, Tanuku 2. ANR College, Gudivada	1. SKSD Mahila kalasala, Tanuku 2. ANR College, Gudivada
Reviewers (Indexing by Scopus/SCIE) Journals only			01 (Oriental Journal of Chemistry)
Journal Editorial Members			
Others (Specify)			

### 9. ANY OTHER WORTHY INFORMATION YOU LIKE TO MENTION:

- I have passionately worked in different committees which in turn helped for the growth of the college.
- I had actively participated in departmental and College Administrative works.
- I sincerely worked hard during the NAAC Committee & Autonomous review Committee
- I had actively participated in all Responsibilities.
- I had actively participated as internal examination member, Various College Committees and also as a Criterion-II Co-ordinator in NAAC Work.

  
Signature of the faculty

  
H.O.D

  
PRINCIPAL  
AG & SG Sidhartha Degree College of  
Arts & Science (Autonomous), Vuyyuru



### Attended Webinars/Workshops/FDP/Conferences:

- Participated in one day National level Online Quiz on “**World Environment Day**” organized by Department of Chemistry & Environmental Studies in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 05-06-2020.
- Participated in Two Day National Webinar (Faculty Development Programme) on “**Analytical and Diagnostic Tools in Chemical and Life Sciences**” organized by Andhra University, Visakhapatnam and Andhra Pradesh Akademi of Sciences, on 05-06-2020 to 06-06-2020.
- Participated in one day National level Online Quiz on “**Awareness on YOGA**” organized by Department of Chemistry & Telugu in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 20-06-2020.
- Participated in Two Day National Webinar on “**Emerging Trends in Chemistry Education and Research (ETCER)**” organized by Wilson College in association with University of Mumbai and Association of Chemistry Teachers, on 25 & 26-06-2020.
- Participated in one day International Webinar on “**Functionalised Quinoxalines as SIRT 1 inhibitors**” organized by Department of Chemistry, P.B. Siddhartha College, Vijayawada, on 27-06-2020.
- Participated in one day National Webinar on “**ICT Tools to Teach Chemistry Online with Simulation Chemistry Labs**” organized by Department of Chemistry, P.B. Siddhartha College, Vijayawada, on 27-07-2020.
- Participated in Two Day International level Webinar on “**Recent Innovations and Concepts in Chemical Science (RICCS-2020)**” organized by Department of Chemistry (S&H), Usha Rama College of Engineering and Technology, on 7 & 8<sup>th</sup> - 08-2020
- Participated in one day National Level Webinar on “**Hydrogen Based Economy – Future Prospects**” organized by Department of Chemistry in association with IQAC & ACT, Mumbai, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 12-08-2020.
- Participated in one day National Webinar on “**Green Chemistry Based Synthesis of Some Bioactive Compounds**” organized by Basic Sciences & Humanities, Vignan's Institute of Management & Technology for Women, Hyderabad. on 12-08-2020.
- Participated in Two day National Level online Workshop on “**Google Tools to Online Teaching**” organized by Krishna University, Dr MRAR PG Centre, Nuzvid on 26<sup>th</sup> & 27 -08-2020.
- Participated in Five Days Online Faculty Development Program on “**Recent Advancement In Chemical Biology And Drug Discovery**” (Rachdd-2020)” Jointly Organized by Department of Chemistry, College of Engineering & Technology, Bhubaneswar and Department of Industrial & Engineering Chemistry, Institute of Chemical Technology – IOC Bhubaneswar on 14<sup>th</sup> - 18 -09-2020.
- Participated in Two day International Virtual Conference on “**Frontiers in Chemical Sciences & Technologies**” Jointly Organized by Department of Chemistry, College of Engineering & Technology, Bhubaneswar and Department of Industrial &



- Engineering Chemistry, Institute of Chemical Technology – IOC Bhubaneswar on 26<sup>th</sup> - 27 -09-2020.
- Participated in one day National Level Webinar on **“Virtual labs-The Key Tools for Excellence in the Wake of Covid-19 Pandemic”** Conducted by Dept. of Zoology & Botany, JKC College, Guntur. on 03-10-2020.
  - Participated in one day National Webinar on **“Disaster Risk Reduction Awareness”** organised by CENTER FOR ENVIRONMENTAL EDUCATION AND ECOLOGICAL DEVELOPMENT (CEED), India, UNDP, NIMHANS, Dept.of Environmental Sciences, ANU, VMC, Vijayawada on 13-10-2020.
  - Participated in 3 Day Online Faculty Development Program on **“Environmental Pollution - Sustainable Technologies for its Control (EP-STC)”** Organized by Chemistry Division of Department of Basic Sciences and Humanities, GMR Institute of Technology, Rajam on 19<sup>th</sup> - 21 -10-2020.
  - Participated in Five Day National Workshop on **“The Seven Assessment Criteria for NAAC Accreditation”** Organized by Organized by IQAC,V.S.R.&N.V.R College, Tenali in Collaboration with Government College for Women, Guntur on 27<sup>th</sup> - 31 -10-2020
  - Participated in one day International Webinar on **“Renewable Feed stocks For Sustainable Chemicals”** organized by Department of Chemistry in association with IQAC, A.G.& S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 12-01-2021.
  - Participated in one day National Level Workshop on **“BEE-KEEPING”** organized by Department of Zoology in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 19-01-2021.
  - Participated in one day National Webinar on **“TLE (Teaching, Learning and Evaluation)IN A NUTSHELL:THE PRESENT SCENARIO”** organized by Department of English in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 06-02-2021
  - Participated in one day National Webinar on **“e-Resources for Academic Excellence with Special Reference to MOOCs”** organized by Department of Library & Information Science in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 07-02-2021.
  - Participated in one Week International Workshop on **“Shape Your Future – Share Not Your Ideas”** organized by IQAC, placement Cell & JKC ,Govt. Degree College, Avanigadda, on 21-03-2022-26-03-2022.
  - Participated in one day National Webinar on **“e-Resources for Academic Excellence with Special Reference to MOOCs”** organized by Department of Library & Information Science in association with IQAC, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru, on 07-02-2021.
  - Participated in one day National Webinar on **“Recent Advances on Health and Agro Science (RAHAS-2021)”** organized by Department of Chemistry, GITAM University on 18-02-2021
  - Participated in one day International E-Conference on **“Molecules to Materials for Sustainability in XXI Century (MMS-2021)”** organized by Department of Chemistry, GITAM University, on 8-9<sup>th</sup> march,2021.
  - Participated in one day National Webinar on **“Biomedical Waste Impact during Pandemic Times”** held on 12th June, 2021,organised in association with CENTER FOR ENVIRONMENTAL EDUCATION ANDECOLOGICAL DEVELOPMENT (CEED), India

- Participated in one day National Webinar on **“Environment and Sustainable Development (An understanding of Sustainable Development Goals and its relevance for India)”** held on 24th June, organised in association with CENTER FOR ENVIRONMENTAL EDUCATION AND ECOLOGICAL DEVELOPMENT (CEED), India
- Participated in a workshop **“prototype Validation Converting Prototype Into a Statup”** organized by Intellectual Property Rights Cell, on 29-06-2021
- Participated in National Webinar on **“In Silico Evaluation And Synthesis Of Novel Sulfonamides As Promising Anti -Viral Drugs Docked Against Anti -Covid-19 Protein Targets”** organized by Department of Chemistry(PG), Andhra Loyola College, Vijayawada, on 30-06-2021.
- Participated in one day International Webinar on **“Antibiotic Discovery Strategies in the Era of Drug Resistance”** organized by Department of Chemistry, P.B.Siddhartha College, Vijayawada, on 27-09-2021
- Participated in one day National Webinar on **“Nano Materials & Their Applications”** organized by Department of Chemistry, Krishna University, Machilipatnam in Association With KBN College, Vijayawada, on 03-08-2021.
- Participated in one day National Webinar on **“Building Climate Ready Communities: Role of Scientific Research and Circular Economy”** organized by Department of Biosciences & Biotechnology in association with Department of Mathematics, Krishna University, on 10-11-2021.
- Participated in Six day Webinar Cum Faculty Development Programme on **“Emerging Trends and Technologies in Development of Skills in Higher Education”** Jointly organized by Department of English & Zoology, JMJ College for Women(A), Tenali, on 21-11-2022 to 26-11-2022 .
- Participated in one day National Webinar on **“Greener Living: Sustainable Energy”** organized by Department of Chemistry, P.B.Siddhartha College, Vijayawada, on 19-11-2022.
- Participated in one week Faculty Development Programme on **“The framework for improving the quality of scientific research in universities”** organized by Department of Department Of Biosciences And Biotechnology, Krishna University, Machilipatnam , on 22-08-2022 to 27-08-2022 .



## Impact of 2-Aminonicotinic Acid and/or $\beta$ -Cyclodextrin on the Morphology of Metal Carbonates ( $M = Ca^{2+}$ and $Sr^{2+}$ ) Crystallization

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We examined the crystallization impact of the surfactant, 2-aminonicotinic acid and/or  $\beta$ -cyclodextrin on the formation of two anhydrous metal carbonates,  $MCO_3$  ( $M = Ca^{2+}$  and  $Sr^{2+}$ ), from their respective calcium chloride and strontium chloride salts along with  $NaHCO_3$  at room temperature. By varying the concentrations of this hybrid surfactant to the concentrations of  $MCO_3$  during the preparations and examined their particle sizes by PXRD, FTIR, TGA and SEM. The characterization on these newly formed anhydrous metal carbonates clearly indicated that  $CaCO_3$  formed with three different shapes such as truncated calcite, hexagonal calcite and rod shaped aragonite. Whereas,  $SrCO_3$  formed with two different shapes such as hexagonal poles and bloom scale bars by varying concentrations of the surfactants. The mixed surfactant certainly made an impact on the metal carbonates formations with different shapes and sizes by varying surfactants concentrations and conditions.

**Keywords:**  $\beta$ -Cyclodextrin, Calcium carbonate, 2-Aminonicotinic acid, Strontium carbonate, Morphology.

### INTRODUCTION

Nature utilizes many natural surfactants from plants and animals to control and direct the crystallization process during natural mineral formations. The natural and biological macromolecules could control the nucleation process during their formation to get various beautiful precious stones with amazing shapes and gem morphology. For example, natural network comprises of an auxiliary system of compromising hydrophobic macromolecules related to acidic macromolecules that go about as a nucleation surface for bio-mineralization. Later, these natural minerals give another course to integrate with various other minerals and materials to form a variety of new materials with desired properties and applications. In nature, the assortment of strong inorganic minerals and materials with intriguing properties and various leveled structures are solidified affected by natural surfactants [1]. Moreover, natural surfactants certainly impact the size, shape and morphologies of minerals and materials, which could certainly play a crucial

role in their physical, biological and mechanical properties of formed materials. In the literature, various studies were reported to investigate the impact of natural surfactants on the nucleation, development and morphology of inorganic materials [2-8].

Reused by the formation process of the biominerals utilizing natural layouts, along with new synthetic methodologies and processes achieved extraordinary materials in the field of biomimetic area of research and materials science [9-16] too. In fact, among the many important commonly used minerals,  $CaCO_3$  is a seriously contemplated in light of its bounty as a biomineral in nature. Henceforth, for making a variety of morphologies of  $CaCO_3$ , various methodologies were tried including Langmuir monolayers [17], self-amassed monolayers [18], miscelles [19], microemulsions [20], etc. Moreover, as fluctuated dissolvable added substances such as manufactured peptides [21], dendrimers [22], microorganisms [23] and chiral compounds [24] have been studied to control polymorphs, directional conglomeration, size and shape control of  $CaCO_3$  precious stones.



## Stability and Validity Indicating UV Spectrophotometric Rapid Assay Method for The Estimation of Promethazine Theoclate

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### Abstract

A simple, selective, linear, precise and accurate UPLC method was developed and validated for rapid assay of Promethazine Theoclate in Bulk and Pharmaceutical tablet Formulation. The chromatographic analysis was performed on a Jasco Model: V-630, with a fixed bandwidth 2 nm and a pair of 1cm matched quartz cell at ambient temperature. The UV detection wavelength was observed at 252nm and injected sample is 20µl. Isocratic elution at a flow rate of 1.0ml/min was employed. The Mobile phase consisting of 0.05M KH<sub>2</sub>PO<sub>4</sub> (to pH 3 with Phosphoric acid) 95V/V and Acetonitrile 5V/V Methanol and water in the ratios of 50v/v and 50v/v. The Rt for Etophyllin was  $\pm 12$  minutes approximately is identified. The Average percentage recovery of the method was in the range of 99-102%. The method was validated as per the ICH guidelines. The method was successfully applied for routine quality control analysis of pharmaceutical formulation.

**Key Words:** Promethazine Theoclate, UV Spectroscopy, Suitability, Recovery, Precise

### 1. Introduction

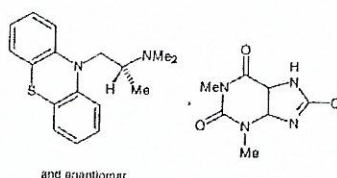


Fig.- 1: Structure of Promethazine Theoclate



# Calculation of Vibrational Frequencies of Sulfur Dioxide by Lie Algebraic Framework

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In this paper, we have demonstrated the application of the  $U(2)$  Lie algebraic method to predict the vibrational frequencies of sulfur dioxide ( $SO_2$ ). A Hamiltonian that preserves the  $C_{2v}$  point group symmetry of the molecule is devised using three interacting Morse oscillators. Root mean square deviation of the calculated vibrational frequencies is found to be  $1.054\text{ cm}^{-1}$  with reference to their experimental values. This asserts that the  $U(2)$  Lie algebraic method is successful in calculating the fundamental vibrational frequencies, and their higher overtones near to the spectroscopic level of accuracy.

topics: vibrational frequencies, sulfur dioxide,  $U(2)$  Lie algebraic method

## 1. Introduction

Theoretical calculations of vibrational frequencies of polyatomic molecules have been one of the interesting research areas for scientists on account of the development of innovative spectroscopic techniques. The investigation of vibrational spectra of molecules has been improved in recent years both theoretically and experimentally. Two approaches have been predominantly used so far in the study of experimental spectra: the well-known Dunham-like expansion of energy levels in terms of rotation-vibration quantum numbers and the solution of the Schrödinger equation with potential functions.

In this work, we applied the Lie algebraic method to study the vibrational frequencies of sulfur dioxide. This method reformulates the Hamiltonian operator in terms of elements of the Lie algebra and provides the same physical information as that of the Dunham and potential approaches [1, 2]. The advantage of the proposed method, as compared to that of the Dunham or potential approach, is that usually fewer parameters are required to get the same level of accuracy, in contrast to their comparators [3, 4]. The Lie algebraic method makes it possible to predict the vibrational frequencies much more accurately and possibly at a much lesser computational cost as compared to other theoretical

approaches. The lesser computational cost of the Lie algebraic framework is evident from the lesser demand of computational time for performing algebraic manipulations, rather than integration and differentiation of the potential function as in other approaches [1, 2].

## 2. The $U(2)$ Lie algebraic method

Sulfur dioxide ( $SO_2$ ) is a bent triatomic molecule with the equilibrium structure belonging to the  $C_{2v}$  point group symmetry. The molecule is non-linear with 3 vibrational degrees of freedom. Each of the vibrating bonds in  $SO_2$  molecule is effectively described by a one-dimensional Morse oscillator and is assigned with a corresponding  $U(2)$  Lie algebra, as per the schematic shown in Fig. 1.

The two possible chains of dynamical symmetry groups in  $SO_2$  molecule, corresponding to the local and normal couplings in stretching vibrations, are given by

$$U_1(2) \otimes U_2(2) \supset O_1(2) \otimes O_2(2) \rightarrow \text{local coupling} \quad (1)$$

$$U_1(2) \otimes U_2(2) \supset U_{12}(2) \supset O_{12}(2) \rightarrow \text{normal coupling} \quad (2)$$

The interaction results in three normal mode vibrations  $\nu_1$ ,  $\nu_2$ , and  $\nu_3$ , correspond to the symmetry species  $A_1$  (symmetric stretch),  $B_1$  (asymmetric stretch), and  $A_1$  (bend).



# Physical growth of Natural Soils Contamination and their metamorphosis of Mineralogical soils in vermiculite

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## Abstract

This present work established the consequences of acidic and alkaline pore fluids over swell performance to inclusive soil. Observing the behaviour for transformations to various soils alkalis contaminate those is much needed to identify unique mineralogy and morphology variations. Authors are well concentrated on the effect of interactions of alkali over soils with increasing strength to a definite period along with an increase in interaction period to specified strength. A total of three different forces for sulphuric acid and potassium hydroxide were utilised as pore fluids for understanding the influence of variable strengths over the swell action of the soil. In contrast, their swelling decreased in the initial stage at a lower strength of sulphuric acid, later enhanced with an increase in solution strength. Two different vermiculite (magnesium-aluminium-iron silicate) soils were used as Diopside and tremolite. These are interacted by various strengths (0.5N, 0.1N, 2N, and 4N) of potassium hydroxide solutions within 9, 32, and 98 days. Complexity in swell variations in contaminated soil is identified accurately by investigating with the help of X-ray diffraction, SEM, and Energy dispersive analysis of X-ray at the end of an interaction. Artificially contaminated samples are subjected to research using various instruments and finally concluded with SEM to mineralogical and their diagnosis variations. Keywords: Vermiculite, Metamorphosis, SEM, Dispersive analysis of Energy.

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## INTRODUCTION

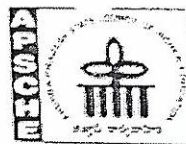
The spawning of different projects for industries and poor waste disposal practices is an excellent understanding of soil behaviour. This is changed latter extreme circumstances for the environment; even though pollutant of soil interaction alters fundamental properties of soil, swelling behaviour of soil, having the capability for causing damage to foundations and superstructures built over it. Valuable (Mal'tsev 1998) insight into the effects of infiltration of solutions like acids and alkalis of different strengths in beds of their structure production. In previous years, several researchers have reported various studies on the effect of acids and alkali over distended clayey soils (Assa'ad 1998, Chunikhin et al. 1988, Joshi et al. 1994). Different authors identified various essential factors, including the composition of chemical and strength of pore fluid, pH-medium, type and degree of electrolyte dissociation (Kabanov et al. 1977, Shekhtman et al. 1995, Sridharan et al. 1981) chemico-mineralogical composition, and exchange capacity (Rao et al. 1994), etc.; Studies disclosed that even soil fabric and its structure significantly influences geotechnical properties whenever interacting by different contaminants under disparate strengths (James et al. 1981, Mitchell et al. 2005). Additional case studies are more related to soil contamination; alkali to crack causes failure to foundation soils and superstructures (Rao et al. 1994, Sinha et al. 2003), as impacts are asymptomatic. The behaviour of stable minerals is affected by contamination by alkali (Turer 2005, Sivapullaiah et al. 2005). Various literature on mineral types present in soil under alkali circumstances can attribute different phases in mineral transformations to various temperature circumstances. Anyhow, out of multiple available soils, Red natural earth and commercial china clay are studied in this work. Interaction of (De la Villa et al. 2005) montmorillonite by alkali solutions among pH 10-13.5 denoted in zeolites formation. Various researchers' information revealed that the association of smectite by Ca(OH)<sub>2</sub>, NaOH, and KOH solutions altered fraction by the construction of interstratified illite smectite, a crystalline form of alkali alumina silicates.





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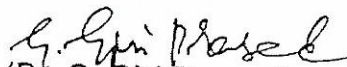
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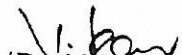
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## Certificate

This is to certify that Prof./Dr./Mr./Ms. V. SREE RAM  
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