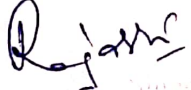


KAKATIYA GOVERNMENT COLLEGE
HANUMAKONDA

Name : Dr. A. Rajashi
Designation : Asst. Prof. of Physics
Year of Award of Ph.D. : 2023, August
Name of the University : Osmania University
Year of entering into Govt. Service : 2004

S. No.	Details of copies of Certificates	Remarks
1	Copy of Ph.D Certificate	Enclosed
2	Press note	Enclosed
3	Research work dates of seminars and Pre-Ph.D Date of joining in this college	Enclosed (Pre submission 07/02/2023 ^{seminal copy} not available)
4	Details of Ph.D Admission-part time or full time	Enclosed (Part-time)
5	Copies of RDC Approval letters of Ph.D	Not applicable.
6	Name of guide/supervisors with mobile number, email id	Prof. G.S. Kumar (Retd) 94944 80152; gobburusk@gmail.com
7	Copies of guide allotment letter	Enclosed
8	No. of increments sanctioned for Ph.D.	3
9	Published Research article-copies.	Enclosed
10	Original Ph.D Thesis.- Book.	Available in college office


PRINCIPAL
KAKATIYA GOVT.COLLEGE
Hanamkonda.

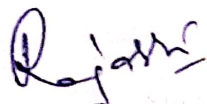

Name & Designation
Dr. A. Rajashi
Asst. Prof. of Physics

KAKATIYA GOVERNMENT COLLEGE
HANUMAKONDA

Name : Dr. A. Rajashi
 Designation : Asst. Prof. of Physics
 Year of Award of Ph.D. : 2023, August
 Name of the University : Osmania University
 Year of entering into Govt. Service : 2004

S. No.	Details of copies of Certificates	Remarks
1	Copy of Ph.D Certificate	Enclosed
2	Press note	Enclosed
3	Research work dates of seminars and Pre-Ph.D Date of joining in this college	Enclosed (Pre submission Seminar copy 07/02/2023 not available)
4	Details of Ph.D Admission-part time or full time	Enclosed (Part-time)
5	Copies of RDC Approval letters of Ph.D	Not applicable.
6	Name of guide/supervisors with mobile number, email id	Prof. G.S. Kumar (Rtd) 94944 80152; gobburusk@gmail.com
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PRINCIPAL
KAKATIYA GOVT.COLLEGE
Hanamkonda.


Name of the Candidate
Dr. A. Rajashi
Asst. Prof. of Physics

OU 970318

Osmania University



Faculty of Science



This is to certify that Swadhani Rajavari

son / daughter of A. Vasanth Rao

having pursued a course of study prescribed by this University and having passed the requirements by Examination and by thesis has been admitted to the Degree of

Doctor of Philosophy

in the Subject of Physics

The title of the Thesis is :

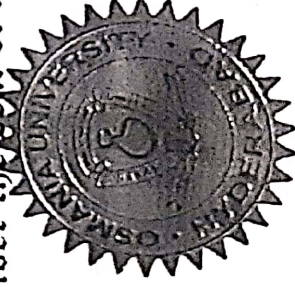
Study of Thermo Optic and Thermo Polarizable Coefficients of YVO₄ using Point Dipole Approximation

The candidate has been declared qualified for the award of the Degree of Ph.D. on 29 Aug 2023

Given under the seal of the University



BA102980599



Hyderabad, T.S.

Karika 9, 1945
Dated October 31, 2023

Amritha
Vice-Chancellor



CONFIDENTIAL SECTION
EXAMINATION BRANCH
NO. 767/Ph.D/Exams/2023

OSMANIA UNIVERSITY
HYDERABAD-500 007,T.S.
Dated: 29 Aug, 2023

PRESS NOTE

The following candidates who had presented the Thesis on the subject mentioned against each for the degree of Ph.D are declared qualified for the award of Degree of Doctor of Philosophy (Ph.D.) of Osmania University, Hyderabad.

		<u>Ph.D.</u>		
S.N Reference No.	Name of the Candidate/ Father Name	Subject	Thesis Title	Supervisor/ Regn. Date
1	PHD44325 Ms. Avadhani Rajasri D/o. A Vasanth Rao	Physics	Study of Thermo Optic and Thermo Polarizable Coefficients of YVO ₄ using Point Dipole Approximation	Prof. G S Kumar(Retd.) Dept. of Physics, O.U., Hyd. (20/11/2002)
2	PHD44326 Ms. Divya Kumari D/o. Harendra Kumar	Nutrition	Understanding Molecular Cross-Talk among Functionally Contrasting Cell Lines During Zinc Deficiency Development and Enhancement of Bioavailability of Novel Anti- Cancer Drugs, Enzalutamide and Ceritinib: Use of Nanotechnology	Dr. Sudip Ghosh Scientist, NIN-ICMR, Hyd. (31/01/2017)
3	PHD44327 Ms. Nimmala Shanthi D/o. Chitna Biksham	Pharmaceutical Sciences	Crosstalk Induced Effects and Performance Analysis of on Chip VLSI Interconnects	Prof. P Raja Rao(Retd.) Univ. Coll. of Tech., O.U., Hyd. (07/09/2018)
4	PHD44328 Mr. Chippa Praveen Kumar S/o. Chippa Ganesh	Electronics & Communications Engineering	Phytochemical Investigation and Biological Studies of Dracaena reflexa and Furcraea foetida	Prof. E Sreenivasa Rao Dept. of ECE, Vasavi Coll. of Engg., Hyd/Co-Supervisor:Prof. P Chandra Sekhar, Dept. of ECE, O.U., Hyd. (03/04/2017)
5	PHD44329 Ms. K Praveenika D/o. Ramalingam	Botany	Democratic Participation and Political Empowerment of Dalit Women in Telangana State - A Case Study of Khammam District	Prof. E Sujatha Dept. of Botany, O.U., Hyd. (24/03/2017)
6	PHD44330 Mr. Timmidl Nagaraju S/o. Venkanna	Public Administration	Changing Nature of Ethics and Values: A Study on Public Servants Multi-Domain Strategy for Pattern Recognition and Imaging of Geophysical Data	Prof. B Amarendra Reddy(Retd.) Dept. of Public Admin., O.U., Hyd. (09/03/2017)
7	PHD44331 Mr. C Krishnalah S/o. Anthaiah	Public Administration		Prof. D Lalith Kumar Dept. of Public Admin., O.U., Hyd. (25/04/2017)
8	PHD44332 Mr. K Rajasekhar S/o. K Mohandas	Geophysics		Prof. N S Rajan (Retd.) Dept. of Geophysics, O.U., Hyd. (09/03/2004)



Ph.D.

S.N Reference No.	Name of the Candidate/ Father Name	Subject	Thesis Title	Supervisor/ Regn. Date
9	PHD44333 Mr. Madhujy Manendar S/o. M Pochniah	Physics	57Fe Mossbauer and Electrical Studies of Magneto-Electric Y- Type Ba _{0.5} Sr _{1.5} Co ₂ Fe ₁₂ O ₂₂ Hexaferrites Synthesis, Screening for Anticancer Activity and Molecular Docking Studies of some Novel 1,2,3-Triazole and Benzoxazole Analogues	Prof. Ch Gopal Reddy Dept. of Physics, O.U., Hyd. (07/04/2017)
10	PHD44334 Mr. Vishnu Thumma S/o. Ranga Swamy	Chemistry		Prof. P Jalupathi Dept. of Chemistry, O.U., Hyd. (23/03/2017)

(P.P. Jalupathi)
Addl. Controller of Examinations
(Confidential)

Copy forwarded to:

1. The Candidate
2. P.A. to Controller of Examination, O.U.
3. The Dean, Faculty of Arts / Engineering / Law / Science / Social sciences, O.U.
4. The Chairperson, BOS in Chemistry/ Electronics & Communications Engineering/ Law/ Marathi/ Microbiology/ Public Administration, O.U.
5. The Head Dept of Chemistry/ Electronics & Communications Engineering/ Law/ Marathi/ Microbiology/ Public Administration/Journalism, O.U.
6. The Secretary to the Vice-Chancellor/P.A. to Registrar, O.U.
7. The Deputy Registrar/ Accounts/ Admin/ Academic/ UGC Cell, O.U.
8. The Librarian, General Library, O.U.
9. The Public Relations Officer, O.U.
10. The Chief Warden, Hostel and Messes, O.U.
11. The ACOE(EDP), Examination Branch, O.U.
12. The Director, Infrastructure, Admn. Buildings, O.U.
13. The Secretary, Assoc. of Indian Universities, 16, Kola Road, New Delhi-110002
14. The Director, Research Division, Assoc. of Indian Universities, 16, Kola Road, New Delhi-110002
15. The Secretary, UGC, 35, Feroz Shah Road, New Delhi-110002
16. The Editor, University News, AIU Campus, Kola Road, New Delhi-110002
17. The Senior Statistical Officer, U G C, (Info & Stats Bureau), 35, Feroz Shah Road, New Delhi - 110 221.
18. The Local Press (through DJPR), Govt. of T.S., Hyderabad.
19. The Examiner

With a request to send the remuneration bill duly filled in immediately and also to return the copy of the Thesis/Dissertation if it is not done so far.



REF NO.:



Scanned with OKEN Scanner



OSMANIA UNIVERSITY

MEMORANDUM OF MARKS

0371206

Examination: **PRE P.H.D JULY 2003**
FACULTY OF SCIENCE

DATE: 17/11/2003

ROLL NO: 2003-7-027

REF NO: 2026
NAME: AVADHANI RAJASRI

FATHER'S NAME: A. VASANTH RAO

SL. NO.	SUBJECT NAME	UNIVERSITY EXAMINATION		RESULT
		MAXIMUM MARKS	MARKS SECURED	
1	RESEARCH METHODOLOGY	100	64	PASS
2	SPECIALISATION (BROAD FIELD)	100	57	PASS
TOTAL		200	121	
GRAND TOTAL		=====	=====	

TOTAL IN WORDS : ONE TWO ONE

GRAND TOTAL AT THE END OF THE COURSE : =====

RESULT : PASS

CLERK-IN-CHARGE

SUPERINTENDENT

CONTROLLER OF EXAMINATIONS





Office of the Dean,
Faculty of Science,
Univ. College of Science (A),
Osmania University,
HYDERABAD - 500 007.

No. 1664 DP/Sc. 2002.

ORDER

Dated : 23 -10-2002.

Sl. Faculty of Science - Admission to Ph.D. course 2002 - **Orders** - Issued

Ref. Univ. Letter No. 3296/FP/99/2002/Acad, Dated 18-10-2002.

..00..

On the recommendation of the Admission Committee and with the approval of the University communicated through the letter cited, the following candidates, who had applied for admission to the Ph.D. course for the Academic Year 2002 in the Faculty of Science are provisionally admitted to the Ph.D. course in the subject mentioned. Their admission is conditional upon realization of dues to the University if any from the candidates. Admission to the Ph.D. course does not automatically ensure admission to O.U. hostels.

The selected candidates are required to fulfil the conditions and to submit their Joining Reports (Proforma provided) within one month from the date of issue of these orders, failing which their admission orders would be deemed to have been withdrawn. No further notice will be given.

The registration is valid for a period of **Three years for Full Time Research Scholars and Four years for Part Time Research Scholars** from the date of joining after which period it will be cancelled unless otherwise extended. The candidates should submit quarterly progress reports on their work through the Supervisor and concerned Head of the department regularly. Irregularity in submission of progress reports will make the candidates liable for cancellation of registration as per rules.

All the selected candidates both Full-Time and Part-Time have to pay the fee of Rs.1,000/- (*Rupees One thousand only*) per year through a demand draft in favour of "**Dean, Faculty of Science, Osmania University, Hyderabad-7**". They should submit their Joining Reports to their Supervisor in the prescribed proforma in triplicate along with the Original D.D. and documents in proof of satisfaction of the conditions stipulated.

If the candidate fails to pay the fees mentioned above within the specified time his/her admission will be cancelled without further notice to the candidate.

Candidates selected under the category "Full Time" shall submit in addition, such an undertaking on the proforma provided (Annexure-1D) duly certified by the Supervisor and the Head of the Department

Candidates selected under the category "Part Time" are required to submit an undertaking in triplicate on the proforma provided (Annexure-1II), that they would be taking necessary leave as per rules of the University and would be submitting the leave sanction letter from their office within three months from the date of his joining.

The Joining reports shall be received by the Supervisors concerned who shall forward them with all necessary documents to the Head of the corresponding University/Department who shall retain one copy of the Joining Report and forward the original copy of the Joining Report along with the original D.D., and documents addressed to the Dean, so as to reach him within one week from the date of submission of the Joining report along with the P. G. Transfer Certificate (in original) of the candidates. No Joining Reports will be accepted without original TCs (Transfer Certificate).

Contd..... 2.....

At the end of one month, the Head of the Department shall forward a consolidated list of all candidates who have covered the course in brother Department (including institutions outside the University Department) to the Exam. Faculty of Science. The Dean's Office shall then issue a list of names of the admitted candidates to the Heads of the Departments concerned, which shall be final.

All provisionally admitted candidates are permitted to attend Pre-Ph.D. classes to be held in the concerned Department. They have to appear for the Pre-Ph.D. examination and the Controller of Examinations, OU would announce the dates in due course. In case if the candidate does not appear or fails to pass the Pre-Ph.D. examination within the next two consecutive chances to be held in the subject, his/her admission would be cancelled without further reference to the candidate.

The admissions are made on the basis of the present occupation of the candidates. In case there is a change in occupation or place of work during the period of their candidature in the Ph.D. course, their admission is liable to be cancelled. Any change in their occupation should be brought to the notice of the Dean, through the Supervisor and the Head of the Department, and the Dean may permit the candidate to continue his/her Ph.D. course as per the rules.

The candidates who is admitted to the Ph.D. course shall not pursue any other course or appear for any other examination leading to any other Degree (Both Full-time and Part-time) of this University or any other University. Any violation of this regulation will lead to the cancellation of admission.

The admission is subject to rules, which may come into force from time to time.

Encl: List of candidates.

DEAN,
Faculty of Science, OU.

Copy forwarded for information and necessary action to:-

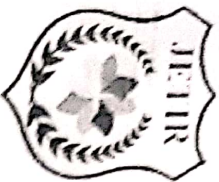
1. The Principal, Univ. College of Science, OU.
2. The Head, Department of _____, OU, He/She is requested to bring this Orders to the notice of the candidates who are provisionally selected for the admission to Ph.D. course 2002 and intimate the candidates to collect Admission Orders from the office of the Dean, Faculty of Science, OU.
3. The Controller of Examinations, OU.
4. The Addl. Controller of Examinations (Confidential), OU.
5. The Dean, Development & UGC Affairs, UGC Unit, OU.
6. The Deputy Registrar (Academic), OU.
7. The Librarian, University Library, OU.
8. The Secretary to Vice-chancellor, OU.
9. The Officer on Special Duty, Vice-Chancellor's Office, OU.
10. The PA to Registrar, OU.
11. The Chief Warden, Hostels & Messes, OU.
12. All Constituent Colleges/Research Centres concerned.

Office of the Dean, Faculty of Science, Osmania University, Hyderabad - 500 007
 PROVISIONAL LIST OF CANDIDATES SELECTED FOR ADMISSION INTO Ph.D. COURSE - 2002 UNDER THE
 FACULTY OF SCIENCE, OSAMANIA UNIVERSITY, HYDERABAD - 500 007

Sl No	Name of the candidate	Name of the supervisor	Whether Full-time/Part-time	Place of work	Remarks
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DEPT. OF PHYSICS					
1	Ms. M Purmina	Dr. Syed Rahman	Full-time	Osmania University	Permission & Leave letter.
2	Smt. A Rajasri	Dr. G. S. Kumar	Part-time	Osmania University	Permission & Leave letter.
3	Mr. P Venkateswara Rao	Dr. Gopa Dutta	Full-time	Nizam College, Hyd.	
4	Mr. K Suresh	Dr. G. Bhikshamaiah	Full-time	Osmania University	
5	Mr. V. Prashant Kumar	Dr. P. Kastalah	Full-time	Nizam College, Hyd.	
6	Mr. K. Rajini Babu	Dr. G. Bhikshamaiah	Full-time	Osmania University	
7	Mr. P. Srinivas	Dr. Syed Rahman	Full-time	Osmania University	
8	Mr. G. Kastalah	Dr. R. Sayanna	Full-time	Osmania University	
9	Mr. A. Siddeswar	Dr. G. S. Kumar	Full-time	Osmania University	
10	Mr. K. Vinay Kumar Reddy	Dr. P. Yadagiri Reddy	Full-time	Osmania University	
11	Mr. B. Sureshchait	Dr. Syed Rahman	Full-time	Osmania University	
12	Mr. C. Srinivasu	Dr. Syed Rahman	Full-time	Osmania University	
13	Mr. P. Vijayabhaskara Rao	Dr. T. Bhimasankaram	Part-time	Osmania University	Subject to taking leave.
14	Mr. S. Leelam Srinivasa Rao	Dr. M. Narasimha Chary	Part-time	Osmania University	Subject to taking leave.
15	Mr. Syed Mahboob	Dr. G. S. Kumar	Full-time	Osmania University	Permission & Leave letter.
16	Mr. B. Ram Kumar	Dr. G. S. Kumar	Part-time	Nizam College, Hyd.	Permission & Leave letter.
17	Mr. G. Patrick	Dr. Adeel Ahmed	Full-time	Osmania University	
18	Mr. S. Narendra Babu	Dr. S. V. Suryanarayana	Full-time	Osmania University	
19	Mr. D. Chinnai Krishna	Dr. P. Venugopal Reddy	Part-time	Osmania University	Permission & Leave letter.
20	Mr. M. Raghavender	Dr. G. Prasad	Full-time	Osmania University	
21	Mr. V. Seetharamiah	Dr. M. Nagabhushanam	Part-time	Osmania University	Permission & Leave letter.

DEAN
 Faculty of Science, OU.



Study of Refractive Index Profile near the Surface of YVO_4 Waveguide using Point Dipole Approach

¹A. Rajasri, ²G. S. Kumar, ¹P. Manohar

¹Assistant Professor, ²Former Professor, ¹Assistant Professor (C)

¹Department of Physics,

¹Pingle Government College for Women, Warangal, Telangana, India

Abstract : Yttrium Ortho Vanadate (YVO_4) is a positive uniaxial, wide transparency range optical fiber material with large birefringence. The variation of refractive indices near the surface of YVO_4 optical fibers is observed. The "Local" fields experienced by ions near the surface of fiber material are different from those in the interior. Using theoretical Point Dipole Approximation (PDA), one can calculate refractive index variation near the surface of the material. In thin films and optical waveguides, this variation can alter the propagation characteristics. The variation of ordinary and extraordinary refractive indices n_o and n_e from the surface to a depth of 71.2\AA near the surface for Z-cut and X-cut YVO_4 waveguides are evaluated using PDA. For a Z-cut waveguide, n_o is found to increase from surface to the interior whereas n_e is found to decrease from surface to the interior. For an X-cut, Z-propagation waveguide, n_o is found to decrease from the surface to the interior whereas, n_e is found to increase from the surface to the interior. It is observed that the refractive indices n_o and n_e variation and also the birefringence ($dn = n_e - n_o$) variation with depth near the surface for both the cases are quite opposite in nature.

IndexTerms - Point Dipole Approximation, refractive index, birefringence, YVO_4 waveguide, thin film.

I. INTRODUCTION

Extensive research work has been carried out on rare earth Orthovanadate, as it is significant oxide in material science and technology (Baogeng Xie, 2020, Chihh, 2019 and Navven, 2018). Particularly, Yttrium Orthovanadate (YVO_4) has immense applications in fields such as laser host material (Banal, 2014 and Huang, 2011) and polarizer (Chen, 2006 and Lagutsky, 2005). Because of its large birefringence ($\Delta n = 0.2225$ at 6328\AA), it has high damage threshold, high conductivity, good mechanical properties and chemical stability (Shuai Wang, 2021, Huang, 2012 and Milev, 2007). It is also widely used as optical isolator and beam displacer (Tang, 2007 and Wang, 2009). The compound attracted many researchers for its large birefringence, non-linear coefficients, and effectively no infrared absorption from 2.5 to 15mm (Mey, 2012 and Messekine, 2010). It can be considered as the oldest laser host crystal for Nd^{3+} ions (Kaminski, 1969 and O'Connor, 1966) and Eu^{3+} ; YVO_4 acts as highly efficient red emitting phosphor. In the characterization of optical devices the Refractive Index is an important parameter and understanding of this from atomic point of view is very essential. Present day interest in every field is to assess the behavior of the sample at nano-scale. Hence the proposed work is aimed at calculating the Refractive indices values at atomic level.

II. EXPRESSIONS FOR REFRACTIVE INDICES—A POINT DIPOLE APPROACH

In the Point Dipole Approach (PDA) method, the ions in YVO_4 waveguide are polarizable points that can accurately approximate the response of a continuum target in the bulk. Each ion can be treated as a point dipole oscillating under the electric field of the incident e.m. radiation. The sum of external field and the field due to all the oscillating dipoles around the ion represents the total field acting on each ion. The Clausius-Mossotti relation, eqn.(1)-eqn.(3), helps us to evaluate the electronic polarizabilities of ions at a given wavelength say 6328\AA by using the refractive indices values from the experimental data (DeShazer, 1987).

$$\chi_s = \frac{P_s}{E_s} = \frac{\epsilon_s - 1}{4\pi} = \frac{n_s^2 - 1}{4\pi} = \frac{\sum_j N_j \alpha_j [1 + \sum_i D_{ij} \alpha_i]}{1 - \sum_j N_j \alpha_j [1 + \sum_i D_{ij} \alpha_i] + \sum_j D_{jj} \alpha_j} \quad (1)$$

$$\frac{n_s^2 - 1}{4\pi} = \frac{\sum_j N_j \alpha_j [1 + \sum_i D_{ij} \alpha_i]}{1 - \sum_j N_j \alpha_j [1 + \sum_i D_{ij} \alpha_i] + \sum_j D_{jj} \alpha_j} \quad (2)$$