

1. DEPARTMENT OF PHYSICS

The Department provides teaching and research in major areas of Physics. It also provides M. Sc, M. Phil and Ph. D programmes. Post doctoral research opportunities are also offered in the form of Research Associateships.

In the academic year 1982-83 15.3 students were admitted in the I semester M.Sc and 3 students in the M. Phil/Ph.D programme. A total of 5 students passed their M. Sc Examinations. The break up of student intake is as follows :

	SC. ST		SC. ST		Others		Total	
	M	F	M	F	M	F	M	F
M. Sc								
Semester I	2	1	—	—	5	4	7	5
Semester II	1	3	—	—	9	5	10	8
M. Phil/Ph.D	1	3	—	1	4	1	5	

Names of M. Phil/Ph.D Scholars on roll during 1982-83.

1. Betylda Jyrwa
2. G. Thakur
3. J. Blah
4. M. Sarkar
5. Phlisdamon Nongkynrih
6. R. Dewri
7. R. Bhattacharya
8. S. S. Khatri
9. T. Chakravorty
10. W. Basaiawmoit

College teachers working part-time on their Ph. D Degree.

Name of scholars who received fellowships in 1982-83
All the 10 scholars listed above, except the college teachers, got fellowships.

Name of the Project	Sponsoring Agency	Investigator
A. 1) Resonance Raman Scattering and Fluorescence Studies on Some Molecular and Condensed systems.	DST	A.L. Verma/ Y.S. Jain
2) Spectroscopic Studies of Quantum Mechanical Tunnelling of Molecular Ions in Solids	DAE	A.L. Verma/ Y.S. Jain
B. 1) Study of Spinglasses	UGC Minor Research Project	P. Shukla
2) Study of Phase Transitions and the Nature of Low Temperature Phase in Disordered Magnetic systems	DAE	P. Shukla
C. 1) Lactics Dynamical Studies of some Crystal Hydrates	UGC	Y.S. Jain
2) IR absorption and Raman Scattering Study of Ferro-electrics	UGC	—do—
D. 1) Study of Fluctuations in Heavy Ions Reactions	UGC Minor Project	R. Singh
2) Trace Element Abalysis	DAE	R. Singh/ D.f. Khathing/ M.K. Chaudhuri
3) Study of cross-section Fluctuation in Heavy-ion Reaction.	CSIR	R. Singh

Collaboration with the other Department Universities.

1. Prof. A.L. Verma
 - (i) NRC Ottawa Canada
 - (ii) Physics Deptt., IIT Kanpur
2. Dr. P. Shukla
 - (i) Dr. T. J. Sluckin
Maths. Deptt., University of Southampton, England
 - (ii) Dr. A.H. Nayar Physics Deptt.
Quaid-i-Azam University
Islamabad, Pakistan.
3. Dr. R. Singh
 - Professor W. Hering, Sektion Physik
University of Munich, Munich, Germany.
4. Dr. K. Kumar
 - (i) Dr. S.P. Gupta, BITS, Pilani.
 - (ii) Dr. P.R. Carey, NRC Canada.
5. Dr. Y.S. Jain
 - Professor H.D. Bisal, IIT Kanpur

Visitors to the Department

1. Dr. P.K. Iyengar
Director Physics Group
BARC Bombay.
2. Dr. G. Venkataraman
Principal Physicist
Reactor Research Centre
Kalpakam.
3. Dr. A. P. Roy
Nuclear Physics Div.
BARC Bombay.
4. Prof V. D. Gupta
Lucknow University
Lucknow.

5. Prof. P. T. Gupta
I. I. T. Kanpur
6. Dr. S. S. Ramamurthy
VEC Project. BARC Bombay,
7. Prof. S. N. Thakur
BHU Varanasi

Publications

- 1) Tunneling Motion of Dipolar Impurities in Alkali Halides ; The KI : No 2 system, S. S. Khatri and A L. Verma, J. Phys, C, Solid State Physics 16, 82157-64. (1983)
- 2) Infrared Absorption due to Pair Modes of the No 2 Ions doped in KI single crystals, S. S. Khatri and A.L. Verma, Physics Letters 95A, 191-93 (1983)
- 3) Molecular Field Theory of Nematics : Density Functional Approach : I Bulk Effects T. J. Sluckin and P. Shukla J. Phys. A 16, 1539 (1983).
- 4) Model of the Glass Transition and the Glassy State, P. Shukla, Z. Physik B. 52, 179 (1983).
- 5) Spinglass Behaviours in Eu, Sr₂-S.: Calculation of Phase Diagram in the Mean Field Approximation, A.H. Nayyar and P. Shukla, Physical Status Solidi, 1983 (in Press)
- 6) "Statistical Analysis of the Elastic and Inelastic scattering of 12C+28S₂ and 16₀+28 Si" R. Singh, Z. Physik A 311 (1983) 99.
- 7) Polarised Raman spectra of an oriented single crystal of barium nitrate monohydrate. O.P. Lamba, H.D. Bist and Y.S. Jain. Can. J. Chem 61, 608 (1983)
- 8) Laser Excited Raman and Infrared spectra of L.B. and r-Picilines O.P. Lamba, J.S. Parihar, H.D. Bist and Y.S. Jain Ind. J. Pure and Appli. Physics 21, 235 (1983).

Publications in proceedings of Conferences and symposia :

- 1) Localized Modes due to Triplet Clusters of the No 2 Ions in KI single crystals, S.S. Khatri and A.L. Verma, Nuclear Physics and Solid State Physics symposium Proceedings, (1982) (In print)
- 2) Phase Transitions in Insulators, A.L. Verma, invited talk at the DAE Physics Symposium 1982 (In Press)
- 3) Renormalization Group Theory of First Order Phase Transitions, J.A. Blah and P. Shukla, Nucl. Phys. and Solid State Phys. 25C (1982).
- 4) A Model of spinglass, P. Shukla and S. Singh Physics of Disordered Solids, ed. P. Shukla, Mittal Publications, Delhi (1982).
- 5) "Spin Alignment in $^{12}\text{C} + ^{12}\text{C}$ Inelastic scattering" W. Trombik, F. Krug, W. Dunnweber W. Hering, D. Konnerth, R. Singh and W. Trautmann, Proc International Conf. on Heavy Ion collisions II La. Ralida, Spain (1982) p. 297 ed. G. Madurga and M. Lozano.
- 6) "Scattering and Reactions of $^{12}\text{C} + ^{14}\text{C}$ " D. Konnerth, K.G. Bernnanelt, K.A. Eberhand, R.Singh, W. Trautmann, and W. Trombik, Proc. Int. Conf. on Heavy ion Collisions II, La Ralida, Spain (1982) unpagged ed. G. Madurga and M. Lozano.
- 7) The hole of Inelastic Excitation in $^{12}\text{C} - ^{14}\text{C}$, D. Konnerth, W. Trombik, W. Trautmann, K.G. Bernhardt, K.A. Eberhard, R. Singh and A. Shrzalkowshi, Verh. DPG (VI) 17 (1982) 1249.
- 8) Measurement of Spin-Alignments in $^{12}\text{C} + ^{12}\text{C}$ W. Trombik, W. Dunnweber, W. Hering, D. Konnerth, F.Kruz, R. Singh, W. Trautmann and K.A. Eberhard, Verh DPG (VI) 17 (1982) 1250.

- 9) Spin Alignment in $^{12}\text{C}+^{12}\text{C}$ Inelastic Scattering W. Trombik, F. Kruz. W. Dunnweber, W. Hering, D. Könterff, R. Singh, W. Trautmann and D. Zeppenfeld, Proc. Int. Conf. on Nucleus Collision, Michigan (USA) Sept-Oct. (1982) Vol. P. 73.
- 10) "Determination of the Efficiency of Ge (Li) Detectors" R. Singh, JIEEC April (1983) Jordan Unpagged.
- 11) Infrared Intensity of Forbidden Modes: A Tool to investigate structural Distortion of Molecular units in crystals: Y.S. Jain and R. Bhattacharjee XIV National Seminar on Crystallography, I.I.T. Kharagpur, X-10 (1982).
- 12) Role of H atoms in Deciding the symmetry, structure and Dynamics of crystals containing complex such as $\text{M}(\text{NH}_3)_6^+$ + Y.S. Jain, *Ibid* X-1 (1982).
- 13) Some structural Information about $\text{C}_6\text{H}_7\text{O}_6$, H_2O from an Analysis of its IR and Raman Spectra Y.S. Jain, S. Mohan and G.P. Srivastava, Proc. Nucl. Phys. Solid State Phys. symp. 25C (1982).

Other Information

Prof. K.K. Gupta is continuing with the writing of his book on Nuclear Physics.

Prof. A.E. Verma has appointed a Member of the UGC Panel on Electronics & Instrumentation. He has also been appointed a Member of the UGC Committee for developing Lasers & Fibre Optics in the Country.

Dr. P. Shukla edited book, Physics of Disordered Solids. It has been published by Mittal Publications, Delhi (1982).

Dr. Kamal Kumar is preparing a book on experimental Physics (Electronics).

2. DEPARTMENT OF CHEMISTRY

2. DEPARTMENT OF CHEMISTRY

The department of Chemistry was established in 1976 as a constituent of the School of Physical Sciences. In order to contribute to the development of the intellectual and academic background of the people of the hill areas of the North East, which is the overall objective of the University as envisaged in the NEHU Act, of the department is imparting knowledge in Chemistry to equip its students with competency to utilise the natural resources available in abundance in this region. The teaching programmes of the department provide a broad knowledge of both theoretical and practical aspects of various modern areas of Chemistry. The inception of a Regional Sophisticated Instrumentation Centre (RSIC) in the University offers new avenues to enable the students of this department to apply modern instrumental techniques for structural and analytical studies. The utility of the course structure in fulfilling the objective of the department is indicated by an impressive placement of the students of its previous batches.

Student Intake

M. Sc.	Male	Female	S.C.	S.T.	Total
Semester I	15	1	2	1	16
Ph. D. Scholars	10	3	—	2	13

M. Sc. Teaching Programme: The department has so far to its credit six batches of students who have been awarded the M. Sc. degree. The course work adopted ensures a sound basis of the fundamental aspects of the principal branches of Chemistry. The teaching programmes have periodically been revised to keep pace with the latest advancement, to overcome the deficiencies of the students of the North-Eastern region. Within the limits

of the constraints, the number of students admitted to the M. Sc. programme has been raised to twenty (20) in order to accommodate deserving applicants and to enhance the likely input to the research schemes on hand. Appropriate relaxation of rules of admission have been enforced to admit all the tribal candidates seeking admission. Efforts are being made to supplement the regular teaching work to enable such students to overcome the deficiencies.

Research Activity : Being conscious of the consideration that a balanced development of a University department is possible only when the research and teaching programmes go hand in hand, considerable emphasis has been laid on the establishment and improvement of research facilities in the department by way of providing excellent working conditions in the research laboratories and sophisticated instrumental facilities. The following are the lists of such instruments being acquired and installed by the department as well as by the RSIC.

Departmental Instruments

1. Parkin-Elmer Model—297 Infrared-Spectrophotometer
2. Varian Model M 590,90 MH Nuclear Magnetic Resonance S Spectrometer
3. Pacific Photometrics Electroanalyser
4. Coleman, C, H and N Microanalytical Instruments.
5. Mettler Microanalytical Balances.
6. Beckman Model UV-26 Ultraviolet and visible Spectrophotometer.
7. Parr Instrument-Pressure Hydrogenators, Autoclaves etc.

RSIC Instruments

1. Perkin Elmer Model 983 IR spectrophotometer,
2. Dupont 8803 High Pressure Liquid Chromatograph.

3. UV-VIS-NIR Spectrophotometer. (Varian 2390)
4. Philips PL N 106 Liquid Nitrogen Plant
5. Mass Spectrometer (GC MS-DS System) Finnigan Matt.
6. Ultra Centrifuge (SCP-85 H) Hitachi.
7. Ampholite Electro Focussing Equipment (LKB)
8. Electron microscopes (Scanning and Transmission) Jeol.
9. Ultra Microtome (LKB).

As in the case of the Post-Graduate teaching programme, the areas of research in progress in the department are of a versatile nature to get a broad-based training in the requirements relevant for the North Eastern region. This is achieved by a judicious selection of a course structure which constitutes a compulsory prerequisite to equip the research students with a broad theoretical background to supplement the experimental investigations to be undertaken. In addition, the students who had their postgraduate degree from this department and those from other Universities as well as the teachers from the level colleges are among the research students of the department. Such a training imparted to the local college teachers is intended to improve the standard of teaching of Chemistry at the undergraduate level in the affiliated colleges of the University. The department has made great efforts to overcome the deficiencies of the students of this region.

A significant aspect has been a welcome enhancement in the increased proportion of tribal students admitted to the Ph. D. programme this year. Out of a total of 13 students admitted, two belong to the ST category.

The efforts of the department in the direction of research initiated right from its inception, culminated in the award of Ph. D. degrees to 5 candidates during the

academic year 1982-83, which should be considered as an important milestone in the history of the department.

A list of the candidates along with their topics of research and supervisors is attached.

LIST OF STUDENTS AWARDED THE Ph. D DEGREE :

SL. NO.	NAME	(TOPIC OF RESEARCH)	SUPERVISOR
1.	N. Roy	Spectrometry of some metal compounds and studies on Fluoride and Acetylacetonate compounds of Chromium.	Dr. M.K. Choudhuri
2.	B.A.K. Bha- Bhattacharjee	Electron Transfer Reactions	Dr. M.K. Mahanti
3.	Veena	Synthetic Studies on Heterocycles	Dr. H. Il-
4.	S. Apparao	A. Study on polarized keten Dithioacetals. B. Synthesis of 1-ryl-2-cyanoaziridines and their reaction with indole.	Prof. H. Junjappa
5.	S. S. Mahiuddin	A Study on the Transport properties of Electrolytes	Dr. K. Ishmail
3.		Research Publications	
1		Synthesis of Tris (acetylacetonate) Chromium (III), $Cr(C_5H_7O_2)_3$, M.K. Choudhuri, N. Roy, and D. T. Khathing. <i>Synth. React. Inorg. Met. Org. Chem.</i> , 12, 715 (1982).	

2. Synthesis of Alkali Metal Trifluoroaquomanganates (II), M. N. Bhattacharjee and M. K. Chaudhuri, *Ind. J. Chem.* 21A, 977 (1982).
3. Synthesis and Spectroscopic Studies of Alkali pentafluoroaquochromates (III), M. K. Chaudhuri and N. Roy, *Synth React. Inorg. Met - Org. Chem.* 12 879 (1982).
4. Synthesis of Alkali Oxydiperoxyfluorovanadates (V), M. K. Chaudhuri and S. K. Ghosh, *Polyhedron*, 1 553 (1982).
5. A Novel Synthesis of Tris (acetylacetonato) Iron (II) M. K. Chaudhuri and S. K. Ghosh, *J. Chem. Soc., Dalton Trans.*, 839 (1983).
6. Alkali Triperoxyfluorovanadates (V), $A_3[V(O)_3F_3]$, M. K. Chaudhuri and S. K. Ghosh, *Inorg. Chem.*, 21, 4020 (1982).
7. Lead Tetraacetate oxidation of Metallic Copper to Cu^{2+} : An unusual oxidation., A. Debroy M.P. Mahajan, M.N. Bhattacharjee and M. K. Chaudhuri, *J. Chem. Soc., Dalton, Trans.*, 2532 (1983).
8. The Direct Synthesis of Bis (acetylacetonate) Nickel (II) Dihydrate and Isolation of d,d,p,p- Tetraacetylthane as the oxidation product of acetylacetone., M.N. Bhattacharjee, M.K. Chaudhuri, S.K. Ghosh, Z. Hiese and N. Roy., *J. Chem Soc., Dalton. Trans.*, 2561 (1983).
9. Reactions of nitrosyl chloride with $Ni(PPh_3)_2X_2$ ($X = Cl, Br, NCS$ or NO_2) K P. Sarma and Raj K. Poddar, *Trans. Met, Chem.* 8 31 (1983).
10. Synthesis and Studies on dichloro iodo triphenylphosphine, oxide nickel (III) K.P. Sarma and Raj K. Poddar, *Polyhedron* 2 672 (1983).
11. Mixed ligand complexes of nickel (II), K. P. Sarma and Raj K. Poddar, *Trans Met Chem.* 8 225 (1983).

12. Cyanotrimethylammonium Methyl Formation and Reaction with d,p-Unsaturated Carbonyl Compounds: Novel Cyclopropanation with an Ammonium Ylid, S.S. Bhattaoharjee, H. Ila and H. Junjappa *Synthesis*, 301 (1182).
13. Base Catalysed Rearrangement of 3,3-bisalkylthio-2-bisalkylthio-2-methyl-acrylophenones to 3-alkylthio-2-alkylthiomethylacrylophenones, S. Apparao, A. Rahman, H. Ila and H. Junjappa, *Tetrahedron, Letters*, 971 (1982)
14. Reaction of S.N-Acetals with Thionyl Chloride: A New General Method for 2-Aryl/carbethoxy-3-Aroyl/4-alkylthiothiazoles, A. Rahman, H. Ila and H. Junjappa, *J. Chem Soc., Perkin, Transactions. I* (1983).
15. A New General Highly Stereospecific Method for Methyl-5-aryl-2, 4-pentadienoates, B. Myrboh, C. V. ASOKAN, H. Junjappa, *Synthesis*, (1983).
16. Desulfurisation of N.N-Diarylthiourea by Lead-tetraacetate oxidation, P.D. Baruah, A. Debroy, S.N. Mazumdar and M.P. Mahajan, *Bull. Chem Soc., Jph*, 0000, 1983.
17. "Solid Solution studies of Hydroxyl and chloroapatites of Arsenic-Preparation and characterization", *Curr Sci.* 51, 772 (1982) T.S.B. Narasaraju, Preeti L and U S. Rai.
18. Solid Molecular Complexes of Phenothiazine. N-Methylphenothiazine with 7,7,8,8, Tetracyanoquinodimethane, S.N. Bhat, V.P. Shedbalkar and H. Kuroda, *Ind. J. Chem.*, 21A 1015 (1982).
19. Transport Number of Charge-transfer Complexes in solution, V. P. Shedbalkar and S.N. Bhat, *Electrochim Acta*, 28, 359 (1983).
20. The Blue shifted Iodine Band, V. P. Shedbalkar and S. N. Bhat, *Ind. J. Chem.*, 22,A 216 (1983)

21. Kinetics of the Transformation of outer Charge-transfer Complexes into inner Complexes, Bharati Bhattacharjee Anuradh Varshney and S. N. Bhat, *J. Ind. Chem. Soc.*, **60**, 842 (1983).
22. Viscometry in the study of Molecular Complexes, Bharati Bhattacharjee and S.N. Bhat, *Proc. Ind. Acad. Sci.*, **92**, 147 (1983).
23. Kinetics and mechanism of oxidation of trans-cinnamic and transcrotonic acids by hexacyanoferrate (III) in perchloric acid medium, A.K. Bhattacharjee and M. K. Mahanti, *Indian J. Chem.*, **21A**, 770 (1982).
24. Effect of solvents on the Mn(acac)₃ complex A. K. Bhattacharjee and M. K. Mahanti, *Indian J. Chem.*, **22A**, 1009 (1982).
25. Kinetics and mechanism of oxidation of trans-cinnamic and transcrotonic acids by hexacyanoferrate (III) in perchloric acid medium, A. K. Bhattacharjee and M. K. Mahanti, *Intl. J. Chem Kinetics*, **14**, 1113 (1982).
26. Kinetics and mechanism of oxidation of quinol by alkaline hexacyanoferrate (III), M. Bhattacharjee and M. K. Mahanti, *Reaction Kinetics and Catalysis Letters*, **21**, 449 (1982).
27. Kinetically controlled conversion naphthalene to 1 naphthol by acidic hexacyanoferrate (III) A. K. Bhattacharjee and M. K. Mahanti, *Indian J. Chem.*, **22A**, 74 (1983).
28. Kinetics of oxidative coupling of phenols: Oxidation of Phloroglucinol by alkaline hexacyanoferrate (III), M. Bhattacharjee and M. K. Mahanti, *Indian J. Chem.*, **22A**, 634 (1983).
29. Kinetics of oxidation of arylalkanes by hexacyanoferrate (III) in acidic media: Oxidation of diphenylmethane and triphenylmethane, A. K. Bhattacharjee and M. K. Mahanti, *Gazetta Chimica Italiana*, **113**, 1 (1983).

- 30 Kinetics and mechanism of oxidation of catechol by hexacyanoferrate (III) in alkaline medium M. Bhattacharjee and M. K. Mahanti, *Gazetta Chimica Italiana*, **103**, 101 (1983).
- 31 Kinetics of oxidative coupling of phenols : Oxidation of naphthols by alkaline hexacyanoferrate (III), M. Bhattacharjee and M. K. Mahanti, *In I J. Chem. Kinetics*, **15**, 197 (1982).
32. Kinetics of oxidation of nitrotoluenes by acidic hexacyanoferrate (III), A. K. Bhattacharjee and M. K. Mahanti, *Bull, Korean Chem. Soc* , **4**, 102 (1983)
33. Kinetics of oxidative coupling of phenols : Oxidation of guaiacol by alkaline hexacyanoferrate (III) S. N. Singh, M. Bhattacharjee and M. K. Mahanti, *Bull, Chem. Soc* , **56**, 1855 (1983)
34. "Concentration Dependence of Transport Properties of Glass Forming Melts" S. Rahiuddin and K. Ismail, *Phil. Chem. Soc, Japan*, in press.
35. Concentration Dependence of Viscosity of Aqueous Electrolytes A Probe into the Higher Concentration, S. Mahiuddin and K. Ismail, *J. Phys. Chem* **87**, 5241 (1983).
36. 'A Study on the Concentration Dependence of Conductance of Aqueous Electrolytes, S. Mahiuddin and K. Ismail, *J. Phys. Chem* , in press.
37. Mixed Alkali Effect in $0.3(x \text{ KSCN} (1-x) \text{ NaSCN}) \cdot 0.7 \text{ Ca}(\text{NO}_3)_2 \cdot 4\text{O}_6\text{H}_2\text{O}$ Melt, P Sangma, S Mahiuddin, and K Ismail, *J. Phys Chem* , in press.

4. Visiting Professors

Sl. No.	Professor	Institution	Topic of Task	Date
1.	Prof. H L. Higam	University of Allahabad	Structural aspects of metal clusters.	16-9-82

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|----|------------------------|--|--|----------|
| 2. | Prof. S.P. Srivastava. | University of
Roorkee | General aspects
of Chemical
Dynamics | 11-12-82 |
| 3. | Prof. D. Mukherji. | Indian Association for the
cultivation of
Science. | Shapes of
molecules : | 25-5-83 |
| 4. | Prof. S.K. Talapatra. | University of
Calcutta | Fact or Fiction
Some recent
aspects of natural
product Chemistry : use of
N.M.R. techniques. | 6-6-83 |
| 5. | Prof. J. C. Ahluwalia. | I.I.T. Delhi | Thermodynamics of biopolymer systems in
aqueous media. | 7-6-83 |
| 6. | Prof. S.M. Taqui Khan. | Central salt
and Marine
Research Institute. | Homogeneous
catalysis by
transition metal
complexes. | 7-6-83 |
| 7. | Prof. S. M. Verma. | B.H.U.,
Varanasi | Conformational
Analysis Assignments. | 13-6-83 |
| 8. | Prof. R. C. Agarwal. | B. H. U.,
Varanasi | Studies of metal
complexes of di-
thio-ligands | 14-6-83 |
| 9. | Prof B.M. Shukla. | Gorakhpur | Age of Nuclear
Energy | 15-6-83 |

5. Conferences/Seminars attended

- | | <i>Name</i> | <i>Title of Paper</i> | <i>Venue</i> |
|----|-----------------|---|---|
| 1. | Dr. S. N. Bhat. | "Studies on Molecular
Complexes of some II-
elements with iodine by
constant activity
method. | Indian Council
of Chemists,
Srinagar (Nov.
1982) |

2. Dr M. K. Mahanti Molecular Orbital Calculations on some organic molecules Invited Lecture, University of Roorkee (J n 1983).

6. Positioning of Students who completed the M. Sc. programme in July 1983

<i>Name of Students</i>	<i>Position</i>
1. Mr Anil K. Dubey.	Research Fellow, IIT Kanpur
2. Mr Abraham Thomas.	Research Fellow, CSIR Dept of Chemistry, NEHU
3. Miss Beonapani Saikia.	---
4. Miss Gandra Bhattacharjee.	Research Fellow
5. Miss Chitrani Yendrebam.	Teaching in a College in Manipur
6. Mr. Debashis Dey.	Research Fellow, Dept of Chemistry, NEHU
7. Mr. Swilken Mawthoh.	Lecturer in Chemistry Lady Keane's College
8. Mr. Gadadhar Sarma.	Teaching in Higher Second- ary School, Tezpur
9. Mr. Jyoti P. Chetia.	Oil and Natural Gas Commission
10. Miss Nashreen S. Islam.	Research Fellow (CSIR) Dept of Chemistry NEHU
11. Mr. Pralay K. Mazumdar.	---
12. Miss Rashmi Satsangi.	Research Fellow (UGC) Dept of Chemistry, NEHU
13. Mr. R. Dayal Yadav.	Teaching in High School, Duliajan

14. Mrs. Shakira S. Islam. Research Fellow (CSIR)
Deptt of Chemistry, NEHU

[IV] Research Scholar	SC/ST	Type of Fellowship	Supervisor
1. Mr. C.V. Asokan.	—	CSIR	Prof. H. Junjappa.
2. Mr. P. D. Baruah.	—	U.G.C.	Dr. M. P. Mahajan.
3. Mr. R. Chakrasali.	—	D.S.T.	Prof. H. Junjappa.
4. Mr. B. Das.	—	College Teacher (Part time).	Dr. M.K. Mahanti.
5. Miss G. Dasgupta.	—	U G C	Dr. M.K. Mahanti.
6. Mr. M. Dasgupta.	—	College Teacher (Part time)	Dr. M.K. Mahanti.
7. Mr. A. Dutt.	—	CSIR	Prof. H. Junjappa
8. Mr. R.N. Dutta Purkayastha.	—	D.A.E.	Dr. M.K. Chaudhuri.
9. Mr. A.K. Gupta.	—	CSIR	Dr. H. Ila.
10. Miss D. Laloo.	ST	College Teacher (one leave from Government of Meghalaya)	Dr. M. K. Mahanti.
11. Miss Minakshi Devi.	—	NEHU	Dr. O.K. Medhi
12. Mr. P. Sangma.	ST	CSIR	Dr. K. Ismail.
13. Mr. A Saxena.	—	D.A.E.	Dr. K.K. Dwivedi

[V] Research Projects taken up by the Department (1982-83)

Title of Project	Funding Agency	Investigators
1. Kinetics of Oxidative cyclization of heterocyclic molecules containing amino imino and thiol functions	UGC	Dr. M.K. Mahanti Dr. M.P. Mahajan.
2. Study of the mixed alkali effect in glass-forming systems	CSIR	Dr. K.I. Ismail.
3. Charge Transfer phenomena in polymers : studies on photoelectric materials	UGC	Dr. S.N. Bhat.
4. Generation and cycloaddition reactions of nitrenes	UGC	Dr. M.P. Mahajan.

3. DEPARTMENT OF MATHEMATICS

The Department of Mathematics provides teaching and research facilities leading to M. Sc M. Phil and Ph. D degrees in Mathematics. In 1982-83, it has also started a certificate and a diploma course in Statistics.

The Department has completed the ninth year of its existence in 1983. As ever, in 1982-83 also, the department continues its efforts to fulfill its objective of imparting sound knowledge of Mathematics through teaching, discussions, guiding research, seminars etc. Efforts are directed both towards promotion fundamental research in mathematics and towards popularizing mathematics in this region by producing good and dedicated teachers in mathematics which will be clear from the data given below. This apart, the faculty members are taking active interest in orienting the existing teachers in this region towards the modern trends in Mathematics. At the same time we have not ignored the hob potential (both inside and outside academics) of certain subjects like Statistics, Operations research and Numerical Analysis and thus we have included these courses in the M. Sc. syllabus. This is precisely the reason why, inspite of serious lack of man-power, we have hurried through in starting a certificate and a diploma course in Statistics in the academic year 1982-83.

Students Intake

Degrees	Male	Female	Total	Of which	
				SC	ST
M.A./M.Sc. Semester I & II	14	6	20	—	2
M.A./M.Sc. Semester III&IV	13	3	16	—	—
M. Phil	2	1	13	—	1
Ph. D.	3	1	4	—	—

Certificate in Statistics	3	3	6	—	6
Diploma in Statistics	C 2	—	2	—	2

College teachers who are doing higher studies in this department for Ph. D. and M. Phil. degree :—

1. Mr. Asok Chakravarty Lecturer, Lady Keane Girls' College Shillong (set topology).
2. Mr. Nirmal Dev —do— —do—
3. M. S. Bose, Lecturer, St. Edmund's College, Shillong.
4. Mr. D. Paul Choudhury, Lecturer, St. Anthony's College, Shillong, College Teachers who participated in conducting the Diploma/Certificate Course in Statistics :—

1. Mr. S. Bhattacharjee, Lecturer, St. Anthony's College, Shillong.
2. Mr. D. R. L. Lyngkholi, Lecturer —do—
Visiting Professor during the current academic year :—

Prof. J.K. Ghosh of Indian Statistical Institute, Calcutta delivered a lecture on "Some problems in statistical inference"

Participation in Research Seminar/Symposium/Conference/Workshop :—

Dr. P. Jothilingam delivered a series of five lectures on "Serre's intersection multiplicity theorem and further consequences" at the Conference on "Commutative Algebra" held at the Punjab University, Chandigarh.

Dr. S.S. Khare gave an invited one hour talk on "Group action and equivalent bordism" on the I. M. M. S. Conference held in December 1982 in Bhagalpur. He gave another one hour invited talk on "Environment bordism and characteristic numbers" in the conference on "Topology and Functional analysis" in Aligarh on January, 1983.

Research Publications

S. S. Khare :

1. "Compact Lie group actions and equivalent bordism". Proc. Amer. Math. Soc, (accepted).
2. Finite group action and equivariant bordism". Pac. J. Math. (accepted).
3. "(F.F.)—Free Bordism, and Stationary Points Set" International J. of Mathematics and Mathematical Sciences (accepted),
4. "(F.F.)—Free Bordism, characteristic numbers and Stationary Points Set" Acta Mathematica. (accepted).
5. Stationary Points set and G-bordism-Indian-J. of Pure and Applied Mathematics, Jan., 1983
6. "Reduction of equivariant bordism group". Studia Scientiarum, Mathematicarum Hungarica (accepted)

Participation in the Conference/Symposia/Workshop on the improvement of School Mathematics and Science in N. E. Region.

Dr. B. K. Dev Sharma twice participated as Director in the 15 days inservice training course for High School and Middle School teachers in Mathematics, organized by the Board of Secondary Education, Govt. of Assam, he participated as President in a session of a conference organized by Association on Improvement of Teaching Mathematics the Jadavpur, Calcutta.

He delivered a talk on the "Status of Mathematics Education in the North-Eastern Hill Region" at I. I. T Kanpur.

He presented a paper "The use of Educational Technology to improve school Mathematics and sciences" at the meeting of Educational Secretaries of the North-Eastern Hill States held in NEHU, Shillong.

Authorship/Co-authorship/Editorship of Popular Science Articles/Books :—

Dr. B.K. Dev Sharma has written two essays in a book 'Asamiya Vijnan Sahitya' published by the Assam Science Society, Gauhati. He has been the co-author and editor of a book "Instructional published by the Board of Secondary Education, Government of Assam"

The following is a list of SC/ST and general students who have been awarded M. Sc degree from our department and have assumed respectable positions in this region especially in academics.

Sl. No.	Name	Category	Present position
1.	Mr. Bulganin Nehru Lamare.	ST	Lecturer, Jowai Collge, Jowai
2.	Mr. Jogen Gohain.	General	Officer, Bank.
3.	Mr. Pranjal Rajkhowa.	—do—	Officer, Sheba Trav ls, Shillong.
4.	Mr. L. Lyngdoh.	ST	Officer, SCERT, Shillong
5.	Mrs Sipra Pa'choudhury	General.	Lecturer, Tura Govt. College, Tura.
6.	Mr Wati Sangba Ao.	ST	I. P. S. Officer
7.	Mr. Debashish Bhatta- charjee.	General	Lecturer, College of Agriculture, Medzi-phema. Nagaland.
8.	Mr. P. S. Marpna.	ST	Lecturer, Sankardev College.
9.	Mr. A. C. Sarkar.	General	Assit. Headmaster, High School in Tripura.
10	Mr. T. Jacob.	General	Lecturer, Deva Matha College, Kerala.
11.	Miss Y. M. Nongsiej.	ST	Lecturer, St. Mary's College, Shillong.
12.	Miss Faluni Paul Choudhury.	General	Research Scholar, Maths. Deptt., NEHU.

Name	Category	Present Position
13. Mr. A. L. Naronha.	General	Principal, St. Edmund's. School, Shillong.
14. Miss J. Padma.	General	M. Phil. Students Maths. Deptt., NEHU
15. Mr. D. R. L. Lyngkhoi.	ST	Lecturer, St. Anthony's College, Shillong.
16. Mr. T. H. S. Bonney.	ST	Lecturer, Polytechnique, Shillong.
17. Miss Jaya Gupta.	General	Lecturer, St. Mary's College, Shillong.
18. Mrs. Sanchali Dam.	General	Teacher, Laban Bengali Girls' H. S., Shg.
19. Mr. J Bhattacharjee.	General	Bank Employee, State Bank of India.
20. Mr. Basil Koikara.	General	Lecturer in Don Bosco, Shillong.
21. Mr. Surajit Das.	General	Lecturer, College in Karimgang, Assam.

Self Assessment :—

As is clear from the positioning of our ex-students and the number of college teachers and students coming forward for research in Mathematics the Department has contributed its mite to the intellectual, academic and cultural advancement of the people of this region. The number of ex-students, especially S. T. students, who have taken jobs as mathematics to teachers throughout the N. E. Region clearly shows that the efforts of the department will go a long way in popularising mathematics in this region, which is a great need of the region. Thus, the department has helped in the fulfilment of the objects of the NEHU Act.