Training and Placement Brochure

DEPARTMENT OF **CERAMIC ENGINEERING**

IIT B.H.U VARANASI UTTAR PRADESH, INDIA | **2107-2018**

About the Department

In the Year 1956, Department of Glass Technology and Department of Ceramic Technology were merged to form the Department of Silicate Technolog, offering a four year degree course by injecting into its curriculum balanced engineering and scientific contents. In the year 1968 the Department was renamed as Department of Ceramic Engineering. Presently this department is unique in the country which offers B.Tech., M.Tech. and Ph.D. Programmes in the areas of Ceramic Engineering and Technology. The Department has so far produced more than 1000 graduates, 100 postgraduates and 30 Ph.Ds.

The Department is pursuing active research in the emerging areas of glass, glass ceramics, refractories, electronic ceramic, cement and pottery & porcelain.

Research papers are being published in reputed national and international journals regularly.

Considering the important role that the department of Ceramic Engineering has played,

the University Grants Commission has granted funds under 'Special Assistance and COSIST' Programmes.

Many R& D projects have been sponsored by AICTE, DST, CSIR and UGC.

The Department celebrated its Platinum Jubilee during 1999 for 75 years of Ceramic education and organized a 'National Seminar on Challenges of 21st Century'

VISION:

To attain global recognition in research and training students for meeting the challenging needs of ceramics & allied industries and society.

MISSION:

Providing high quality undergraduate and post graduate education in tune with changing needs of industry.

Generating knowledge and developing technology through quality research in frontier areas of ceramic and interdisciplinary fields.

Fostering industry-academia relationship for mutual benefit and growth through short-term courses, workshops, and exchange visits.

OBJECTIVE:

To provide fundamental technical knowledge and skills in the areas of traditional ceramics such as glass, pottery, porcelain, whitewares, cement, refractories and furnace technology.

To provide skills and practical experience to fulfill their professional duties and responsibilities in teamwork, ethics, and technical leadership.

To develop strong interaction with industries through collaborative research, student training, consultancy and to work on multidisciplinary and real life industrial problems.

To make students to be in a position to practice professionally in various positions in industry or government sector. To mould students to become future engineers, scientists, researchers, and innovators and to contribute to the society.

ACADEMICS

FACULTY

- Degrees from renowned colleges from top national and international universities;
- Bestowed with several prestigious awards;
- Involved in cutting edge industrial and state funded research;
- Holding various administrative and managerial offices;
- Authors of several renowned books and publications in journals of national and international repute;
- Offering consultation to industries and the government and mentorship to student startups;
- Serve as visiting faculty in reputed universities;
- Enjoy full academic autonomy to update their curriculum to keep pace with the modern developments and innovate on the current teaching methods;

By close interaction with the students, our faculty members guide and inspire students towards success.

STUDENTS INVOLVEMENT

PROJECTS IN RECENT PAST

Research:

1. Synthesis of formamidinium lead iodide (FaPbI3) a pervoskite PV absorber using a radiative thermal annealing system.

2. Exploratory project: Preparation and study of structure and electrical characteristics of Bi4Ti3O12 and BaBi4Ti4O15 (electronic ceramic materials) in Aurivillious system.

3. Development of superior cathodes for IT-SOFCs'.
   The present solid oxide fuel cells have very less efficiency and are not portable. Therefore it is necessary to synthesise novel cathode material to decrease the working temperature of SOFCs and increase its efficiency, also making it portable.
   In the research project , several compounds were synthesised and tested for its conductivity and electrocatalytic activities. The results obtained were positive.

DIH:

1. In this we designed and developed a Rapid Thermal Processing instrunent that is used for annealing of provskite and absorber layer of thin film solar cell. It has a ramp rate of 28 degree celcius far greater than convention al annealing instrument.

2. Preparation of p-type absorber layer of CIS and analysis of its properties.

3. We are designing and developing a ceramic air cooler. A cooler with its outer body made up of ceramics. We are working on designing a porous material with good strength and low thermal conductivity. This cooler cools through the process of evaporation and hence reduces the amount of electricity used. It's size will be far smaller than normal coolers and hence take very low space. It can acts as a revival for old pottery industries.

4. Capacitance of spinel materials. We are trying to increase the capacitance of various spinel structures by doping them with various elements. Further, we are also checking for the psedocapcitive behavior of this spinel oxide materials.the success of research will be a great help in energy storage sector. This will increase the battery life and power of the electric vehicles and hence a step forward towards decreasing pollution.

COURSE STRUCTURE :

SEM 3

Ceramic Raw Materials and Analysis, Fundamentals of Ceramic Processing, Materials Science, Mathematical Method, Electronics & Instrumentation Theory of Machines & Design.

SEM 4

Properties of Ceramic Materials Fuels, Furnaces and Pyrometery, Particle Mechanics and Fluid Flow Process, Process Calculations Numerical Methods, Electrical Engineering.

SEM 5

Electro Ceramics Engineering, Ceramic and Abrasives, Heat and Mass Transfer, Pottery & Heavy Clayware Refractories, Thermodynamics and Phase Equilibria.

SEM 6

Cement & Concrete Technology, Ceramic Coating, Glass and Glass Ceramics, Ceramic Instrumentation & Process Control

SEM 7

Ceramic Processing & Fabrication, Glass Technology, Ceramic Instrumental Analysis, Plant Equipment & Furnace Design, Bio-Ceramics, Advanced Techniques for Materials Characterization.

SEM 8

Pollution Control in Ceramic Industries, Pottery & Porcelain, Refractories , Industrial Economics & Factory Management, Electrical and Electronic Ceramic, Advanced Glass Technology.

SEM 9

Engineering Mathematics, Phase Equilibria and Kinetics of Ceramic Systems , Nano-Ceramics, Advanced Refractory Engineering.

Centralized Major Research & Testing Facilities:

X-Ray Diffractrometer	ID3000 Rich Seifert, Germany
Simultaneous DTA/TGA	STA 409 Netzsch, Germany
DTA/TGA/DSC	Labsys SETARAM, France
Sputter Coating Unit	Hummer 6.2, LADD Research, USA
Surface Tension / Contact Angle Measurement	DSA-10, Kruss Gmbh, Germany
FTIR Spectrometer	Varian 1000, USA
UV-visible Spectrophotometer	SL-164, Elico, India
Reflection Microscope	MPS-30, Leica, Germany
Reflection/ Polarizing Transmission Microscope	Zeiss, Germany
Universal Testing Machine	AGS-D Series, Shimadzu, Japan
Micro Hardness Tester	HMV-2000, Shimadzu, Japan
Grinding & Polishing	Buehler, USA
Vibro Energy Mill	Retsch, Germany
ISOMET Low Speed Saw	Buehler, USA
Centrifugal Ball Mill	Retsch, Germany

Other Testing Facilities :

"INDFUR" High Temp. Horizontal Electrical Furnace

"Electro Heat TM" High Temp. Controlled atmosphere cum vacuum tubular furnace

Hummer SC-6 Sputter Coater

NETSZ Simultaneous Thermal Analyzer (upto 1550°C)

Universal Testing Machine

Transmission cum Reflecting optical Microscopes,

V-I Test Set Up

UV-visible Spectrophotometer

L.C.R. Meter

Environmental Chamber

Pilot Plant for Pottery and Glassware

Annealing-cum-decorating Lehr

Scanning Electron Microscope (SEM)

Microwave Sintering Furnace

Pin on disk friction and testing

Millipore distillation Plant.

Rockwell & Brinal hardness tester

OUR PAST RECRUITERS:

OYO
OLA
Snapdeal

Flipkart
TATA Steel
JSW

SAIL
Murugappa
Vodafone

EXL
ZS
Oracle

CitiCorp
Cognizant
IquantI

Novartis
Innoplexus
IPAC