

# NEWSLETTER

## METALLURGY DEPARTMENT

(NBA ACCREDITED 2023-25)

**January 2022 to June 2022**



# METALLURGY

# राष्ट्रीय प्रत्यायन बोर्ड

चौथा तल, ईस्ट टावर, एन. बी. सी. प्लेस, भीष्म पितामह मार्ग, प्रगति विहार, लोधी रोड, नई दिल्ली -110003  
**NATIONAL BOARD OF ACCREDITATION**  
4th Floor, East Tower, NBCC Place, Bhisham Pitamah Marg, Pragati Vihar, Lodhi Road, New Delhi 110003



F.No- 20-78-2013-NBA

Date: 27-04-2022

To  
The Principal  
Government Engineering College,  
Gandhinagar Nr. G.E.B. Cross Road,  
Sector - 28, Gandhinagar –Gujarat- 382028

**Subject: Accreditation status of program applied by Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028.**

Sir,

This has reference to your application I.D. No. 5695-15/06/2021 seeking accreditation by National Board of Accreditation to UG Engineering program offered by **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028.**

2. An Expert Team conducted onsite evaluation of the program from **18<sup>th</sup> to 20<sup>th</sup> February, 2022.** The report submitted by the Expert Team was considered by the concerned Committees constituted for the purpose in NBA. The Competent Authority in NBA has approved the following accreditation status to the program as given in the table below:

Sl. No.	Name of the Program(s) (UG)	Basis of Evaluation	Accreditation Status	Period of validity	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1.	Metallurgy	Tier II June 2015 Document	Accredited	Academic Years 2022-2023 to 2024-2025 i.e. up to 30-06-2025	Accreditation status granted is valid for the period indicated in Col.5 or till the program has the approval of the Competent Authority, whichever is earlier

3. It may be noted that only students who graduate during the validity period of accreditation, will be deemed to have graduated with an NBA accredited degree.

4. The program has been granted accreditation for 3 years. **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028** should submit the Compliance Report at least six months before the expiry of validity of accreditation mentioned above so as to be eligible for consideration by the concerned Committee in NBA for further processing of the accreditation status.

5. The accreditation status awarded to the program as indicated in the above table does not imply that the accreditation has been granted to **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028** as a whole. **As such the Institution should nowhere along with its name including on its letter head etc. write that it is accredited by NBA because it is program accreditation and not Institution accreditation. If such an instance comes to NBA's notice, this will be viewed seriously.** Complete name of the program(s) accredited, level of program(s) and the period of validity of accreditation, as well as the Academic Year from which the accreditation is effective should be mentioned unambiguously whenever and wherever it is required to indicate the status of accreditation by NBA.

6. The accreditation status of the above program is subject to change on periodic review, if needed by the NBA. It is desired that the relevant information in respect of accredited program as indicated in the table in paragraph 2, appears on the website and information bulletin of the Institute.

Tel: +91 11 2436 0620-22, 2436 0654; Telefax: +91 11 4308 4903  
Website: <http://www.nbaind.org> | Email: [membersecretary@nbaind.org](mailto:membersecretary@nbaind.org)

Contd./\_

-2-

7. The accreditation status awarded to the program as indicated in table in paragraph 2 above is subject to maintenance of the current standards during the period of accreditation. If there are any changes in the status (major changes of faculty strength, organizational structure etc.), the same are required to be communicated to the NBA, with an appropriate explanatory note.

8. A copy each of the Report of Chairman of the Visiting Team and Evaluators' Report in respect of the above program is enclosed.

9. If the Institute is not satisfied with the decision of NBA, it may appeal within thirty days of receipt of this communication giving reasons for the same and by paying the requisite fee.

Yours faithfully,

(Dr. Anil Kumar Nassa)  
Member Secretary

Encls.: 1. Copy of Report of Chairman of the Visiting Team.  
2. Copy of Expert Report of the Visiting Team.

## **ABOUT THE INSTITUTE**

Established in 2004, Government Engineering College, Gandhinagar (GEC-Gn) takes pride in its highly motivated students. Our students are life-long assets that help this institute to continuously evolve and work towards its Vision. Approved by AICTE. The College is administrated by Directorate of Technical Education, Gujarat State, Gandhinagar. GEC Gn is affiliated to Gujarat Technological University. GEC-Gn offers its students a wide range of courses like Biomedical, Computer, Electronics & Communication, Instrumentation & Control, Information Technology and Metallurgy.

## **VISION OF THE INSTITUTE**

To be a premier engineering institution, imparting quality education for innovative solutions relevant to society and environment.

## **MISSION OF THE INSTITUTE**

- To develop human potential to its fullest extent so that intellectual and innovative engineers can emerge in a wide range of professions.
- To advance knowledge and educate students in engineering and other areas of scholarship that will best serve the nation and the world in future.
- To produce quality engineers, entrepreneurs and leaders to meet the present and future needs of society as well as environment.

# **METALLURGY**

## **ABOUT THE DEPARTMENT**

The Metallurgy Department since its inception in 2008 is a backbone of GEC-Gandhinagar's events, research activities and initiatives. It is a unique initiative of Government of Gujarat in the present science and technology education and research scenario of India. At present, the department offers a four year undergraduate course in engineering. Faculty members are good blend of industrial/ academic research experienced, studied from national and state reputed institutes. Department has developed COQ (Centre for Quality) NDT which established under "Vibrant Gujarat-2019"- Financial MOU in collaboration with Gulfnde along with various well equipped metallurgical laboratories.

Currently, the focus of department activities are multi-directional with an emphasis on both research and education. Our collaborations with FCIPT, CFER, INDUS University, PDEU, IIM-Baroda Chapter, IIF- Ahmedabad Chapter, ASM International - Gujarat Chapter, IE-Gujarat Section, etc. Students are encouraged and supported to actively participate in various curricular and non-curricular activities at different level.

## VISION OF THE DEPARTMENT

Developing excellence in Metallurgy Engineering education through research, development innovation and team work for the benefit of society and environment.

## MISSION OF THE DEPARTMENT

- To prepare competent metallurgy engineers who can apply metallurgical fundamentals to control and manage different metallurgical and materials processing operations to produce quality metals products in industries.
- To deliver information about current trends in the field of metallurgy and materials to the students.
- To encourage students to work on innovative projects related to metallurgy engineering for managing defects free, economical, energy efficient products, processes or devices to best serve the nation to fulfil the socio-economic, techno-commercial and environmental needs.

## LIST OF FACULTY MEMBERS WITH QUALIFICATION

Sr. No.	Name of Faculty	Qualification	Designation
1	Dr. I. B. Dave	Ph.D (Met. & Mat. Engg.)	Professor & Head
2	Prof. S. I. Patel	ME (Met. & Mat. Engg.)	Assistant Professor
3	Dr. D. G. Sharma	Ph.D (Metallurgy)	Assistant Professor
4	Prof. H. H. Jadav	ME (Met. & Mat. Engg.)	Assistant Professor
5	Dr. P. K. Nanavati	Ph.D (Met. & Mat. Engg.)	Assistant Professor
6	Prof. D. V. Mahant	ME (Met. & Mat. Engg.)	Assistant Professor
7	Prof. B. R. Rana	ME (Met. & Mat. Engg.)	Assistant Professor
8	Prof. D. A. Patel	ME (Met. & Mat. Engg.)	Assistant Professor
9	Prof. H. H. Thakar	ME (Met. & Mat. Engg.)	Assistant Professor
10	Dr. M. S. Dani	Ph.D (Metallurgy)	Assistant Professor

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## ACHIVEMENTS OF THE FACULTIES



Dr. I B Dave delivered expert talk on “Ancient Indian Non Ferrous Metallurgy” at webinar series Ancient Indian Metallurgy, organized by Vigyan Gurjari and ITM University on 2/2/2022.

Dr. I B Dave delivered expert talk on “Non Ferrous Metallurgy in Ancient India” at webinar series Metallurgy in Ancient India, organized by Vigyan Gurjari and Dr. S & S S Ghandhy College Surat during March 7-11, 2022.

Dr. I B Dave delivered expert talk on “ Physical metallurgy and Heat treatment of steel and cast iron” at DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Dr. I B Dave published three research papers in reputed journal. (Details are given in research activity).



Prof. S I Patel successfully completed NPTEL-AICTE approved 8 week Faculty Development program on “Materials Science and Metallurgy”.

Prof. S I Patel attended one week FDP on Metallurgy for All during Feb 21 - 25, 2022.

Dr. D G Sharma delivered expert talk on “Metals in Ancient India” at webinar series Metallurgy in Ancient India, organized by Vigyan Gurjari and Dr. S & S S Ghandhy College Surat during March 7-11, 2022.

Dr. D G Sharma delivered expert talk on “Metals in Ancient India” at webinar series Ancient Indian Metallurgy, organized by Vigyan Gurjari and ITM University on 2/2/2022.



Dr. D G Sharma delivered expert talk on “Extractive metallurgy for non ferrous metals” at DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Topper of NPTEL-AICTE approved 8 week Faculty Development program on “Materials Science and Metallurgy” with silver elite certification.

Dr. D G Sharma appointed as Supervisor for guiding 4 PhD students at GTU.

Dr. D G Sharma published a research paper in reputed journal. (Details are given in research activity).



Prof. H H Jadav delivered expert talk on “Research facilities at Metallurgy Dept.” at DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Prof. H H Jadav has coordinated DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Prof. H H Jadav published a research paper in reputed journal. (Details are given in research activity).

## ACHIVEMENTS OF THE FACULTIES



Dr P.K.Nanavati, Asst. Prof. Metallurgy , GEC, Gandhinagar presented one hour webinar on “Metals & Their Welding Behavior” on May 6, 2022 organised by parul University.

Dr P.K.Nanavati conducted two sessions -“Destructive Testing of the Welded Joints” & “ Welding Metallurgy & Weldability of Steels” on May 26, 2022, organized by Indian Institute of Welding (IIW) Baroda.



Prof. D V Mahant delivered two expert talks on “Road map to iron and steel industries” and “Secondary steel making” at DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Prof. D V Mahant completed NPTEL-AICTE approved 8 week Faculty Development program on “Materials Science and Metallurgy” with Elite certification.



Prof. B R Rana delivered expert talks on “Research facilities at Metallurgy Dept.” at DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Prof. B R Rana has coordinated DTE Approved AICTE-GTU sponsored Online FDP- “Metallurgy for All” during Feb 21 - 25, 2022.

Prof. B R Rana successfully completed NPTEL-AICTE approved 8 week Faculty Development program on “Principles of casting technology”.



Prof. D A Patel published a research paper in reputed journal. (Details are available in research activities).



Prof. H H Thakar completed NPTEL-AICTE approved 8 week Faculty Development program on “Materials Science and Metallurgy” with Elite certification.

Successfully coordinated One Week Webinar Series on Metallurgy and Materials Science during February 7-11, 2022



Dr Minal S Dani published two research papers in reputed journal. (Details are given in research activity).

Successfully coordinated One Week Webinar Series on Metallurgy and Materials Science during February 7-11, 2022

Dr Minal S Dani attended one week FDP on Metallurgy for All during Feb 21 - 25, 2022.

## NBA INSPECTION AND ACCREDITATION

The NBA visit was held for the Metallurgy Department on 18th to 20th February 2022. On 12th April 2022, Metallurgy Department, GEC-Gn got NBA accredited for three years from 2022-23 till 2024-25. The graduates from accredited Institution would get the opportunity for international employment, especially in Gulf countries. This achievement is the fruit of hardships faced by faculty members, students and proactive alumni members. Metallurgy department congratulates and expresses sincere thanks to all stakeholders who have directly to indirectly contributed to a long journey of the accreditation process.

## PEDAGOGY SESSIONS

Sr. No	Name of Speaker	Department	Topic Delivered	Date
1	Prof. H. H. Jadav	Metallurgy	Intergranular Corrosion	01/01/2022

## GLIMPSES OF EXPERT LECTURE

Sr. No	Date/Time	Speaker	Topic	Organizing Partner	Coordinator
1	18/1/2022 11:30 - 12:30	Prof. Chandramaili Pathak, (Asst Prof. EDII, Gandhinagar)	Entrepreneurship as a Career	SSIP Cell & EDII Gandhinagar	Dr. P K Nanavati
2	29/1/2022 11:30 - 12:30	Prof. Nrupesh Shah	Road Safety Awareness	NSS Unit, GECG	Prof. H H Jadav
3	4/3/2022 10:00 - 11:30	Dr. Vishvesh Badheka (Prof. & Head, Mechanical Engg. PDEU)	Advance welding processes for additive manufacturing	SSMEG, IIW- PDEU Student chapter	Dr. P K Nanavati Prof. H H Thakar
4	4/3/2022 11:30 - 1:00	Mr. Kshitij Acharya (Ph.D Research Scholar, Mechanical Engg. PDEU)	Additive manufacturing- 3D printing	SSMEG, IIW- PDEU student chapter	Dr. P K Nanavati Prof. H H Thakar
5	11/3/2022 10:30 - 12:30	Prof. Harshal Tuvar (Asst. Prof. Appl. Mech. GEC Gandhinagar)	Mohr's Circle	-	Dr. I B Dave, Prof. S I Patel

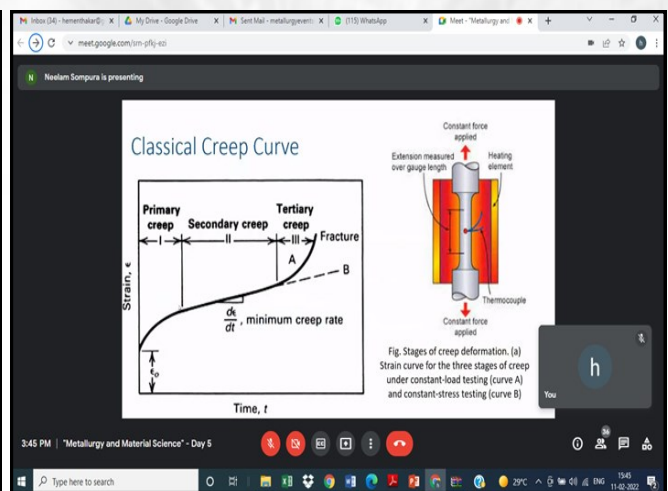
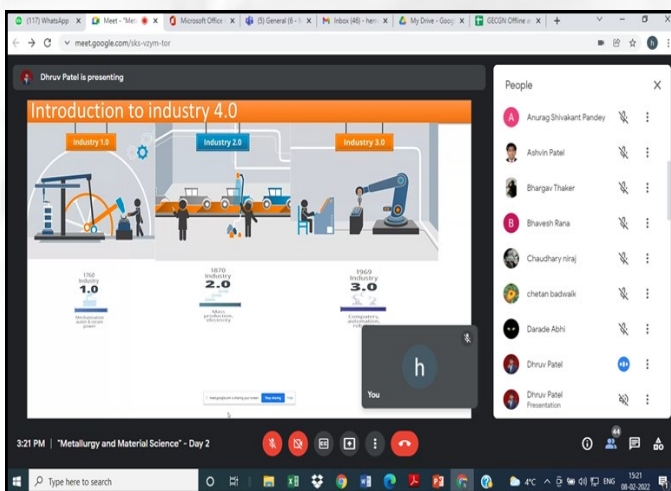


# GLIMPSES OF “WEBINAR SERIES”

As per the planning done in body meeting of SSMEG on 18/12/2021, under the guidance of Dr. S. P. Dave, (Principal, GEC Gandhinagar), Metallurgy department, GEC Gandhinagar has organized one week online webinar series on “**Metallurgy & Material Science**” in association with alumni association Students Society of Metallurgy Engineers Gandhinagar during 7/2/2022 to 11/2/2022, 3:00 Pm onwards.

This webinar was organized by Prof. H. H. Thakar and Dr. M. S. Dani. Motive of this event was to give exposure to students and make them familiarize with various advancement and research in metallurgy by giving online expert lectures.

The webinar series was inaugurated on 7/2/2020 3:00 PM by Dr. I. B. Dave, HOD Metallurgy Dept. and Dr. G. H. Upadhyay, Principal, MGITER. Navsari. More than 60 participants like current students and alumni were remain present. Online practical session and expert lectures were given on various topics of metallurgy during this event. Uniqueness of the event was the expert speakers, being alumni of the department and currently working on remarkable positions in reputed industries.



Sr.	Date	Expert Details	Topic
1	7/2/2022	<b>Mr. Jaydeep Nandaniya</b> Founder, Wohlfarth Metallen Inc., Rajkot	Advances in Powder Metallurgy
2	8/2/2022	<b>Mr. Dhruv Patel</b> Founder Managing Director, D3S Healthcare Technologies, Ahmedabad	Industry 4.0 in Metal industry
3	9/2/2022	<b>Ms. Khushbu Sharma</b> Counsellor, Storm Overseas Education, Ahmedabad	Better Career Prospects by Studying Abroad
4	10/2/2022	<b>Ms. Renu Ghanghas</b> Asst. Prof., L E College, Morbi	Microscopy in Material Science
5	11/2/2022	<b>Ms. Neelam Sompura</b> Lecturer, Govt. Polytechnic, Rajkot	Creep Failure

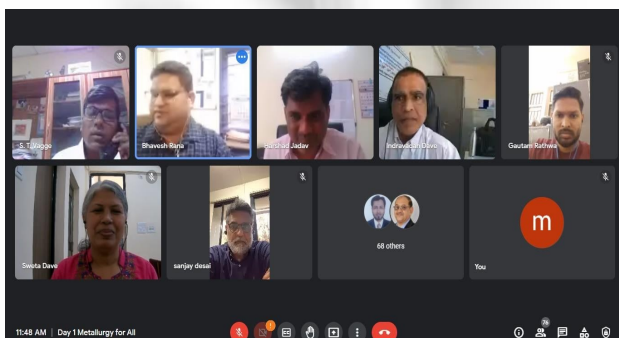
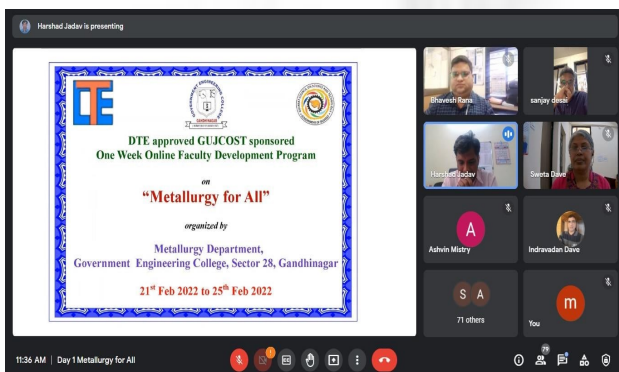
## GLIMPSES OF “WEBINAR SERIES”

GUJCOST sponsored one week Online Faculty Development program on “**Metallurgy For All**” was organized during February 21 - 25, 2022 by Metallurgy department, GEC Gandhinagar. The motivation behind organizing the FDP was to spread knowledge of metallurgy to other engineering fields and make society aware about the role of metallurgy and materials science in daily life. Mr. Sanjay Desai, managing director, RBD Engineers Pvt. Ltd, Ahmedabad was invited as Chief Guest for inauguration ceremony. As a kind word, he had emphasised the need of metallurgy as sustainable industry in recent era. Dr. G.H. Upadhyay, Principal, MGTIER, Navsari, Gujarat, invited as Guest of honor, had provided the motivational speech. This FDP has been coordinated by Prf. H H Jadav and Prof. B R Rana.

The experts were invited from various engineering colleges, industries and research institutes. Total 45 participants from various Government Engineering Colleges, Self-Financed Institutes and Grand In-Aid Institutes had participated.

On the last day of FDP, Mr. Dinesh Daga, Shree Hans Alloys Pvt. Ltd, Dholka, Ahmedabad and Dr. K. Baba Pai, Director, ITM University, Vadodara, were invited as Chief Guests and Guest of Honor respectively for valedictory function.

The overall feedback from participants were encouraging and very good in terms of content, experts, duration of FDP.

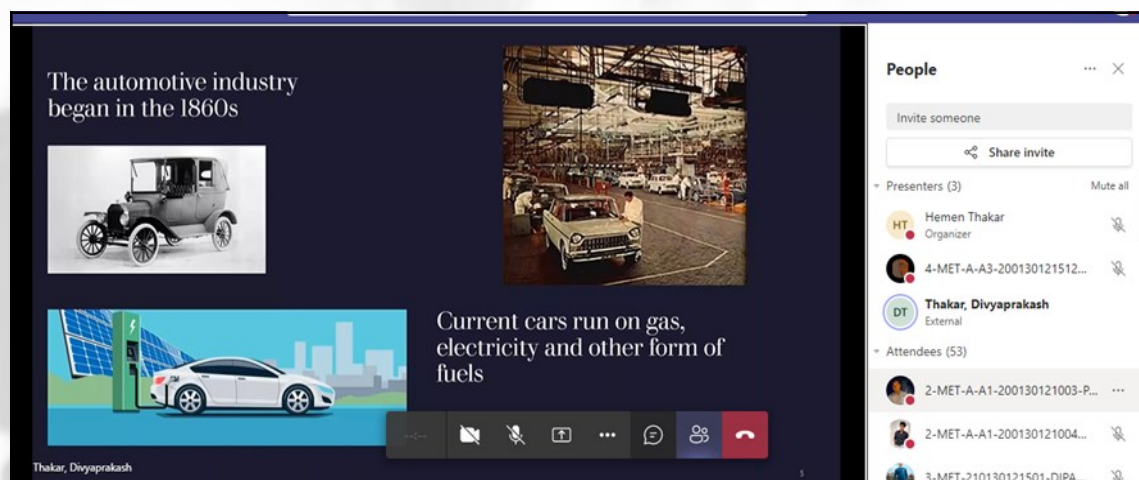


## GLIMPSES OF “ALUMNI MEET 2022”

The Department of Metallurgy Engineering have organized an expert talk by Alumni in this meeting for all current batches and pass out students on 26th April 2022 on the Google Meet Platform starting at 10 am as well as an offline expert talk was conducted. The meeting started with welcome introduction by Metallurgy Department alumni coordinator Prof. H H Thakar followed by series of two expert sessions by Alumni of the department. The event was enjoyable and simultaneously profitable in terms of providing career as well as technical guidance to the current enrolled students.

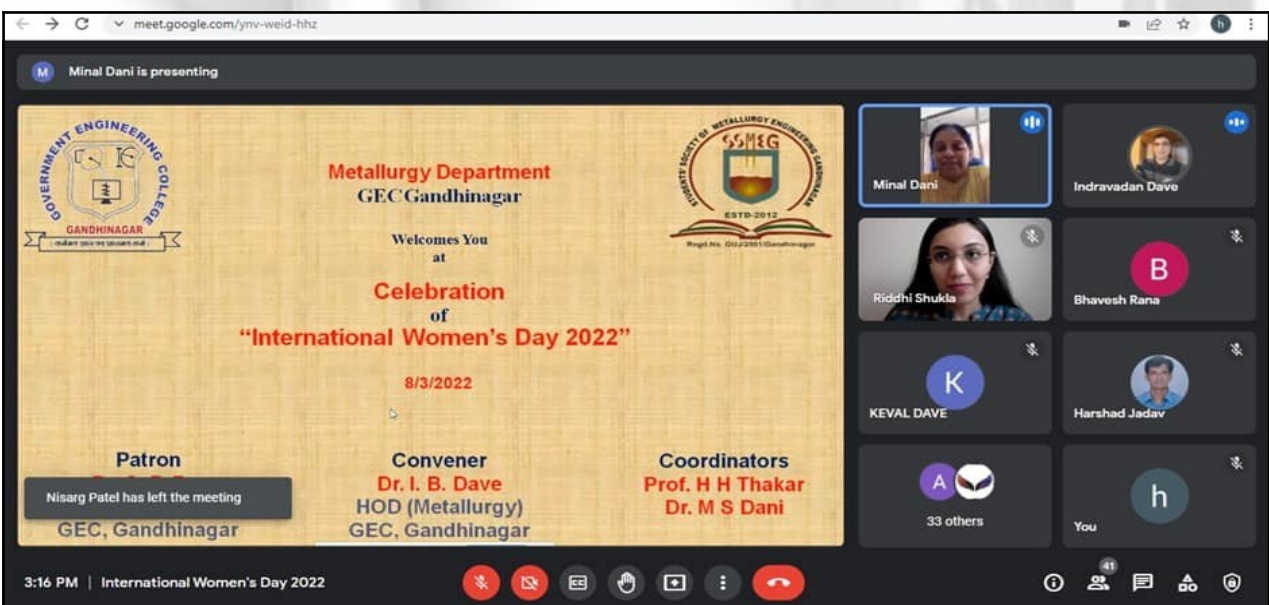
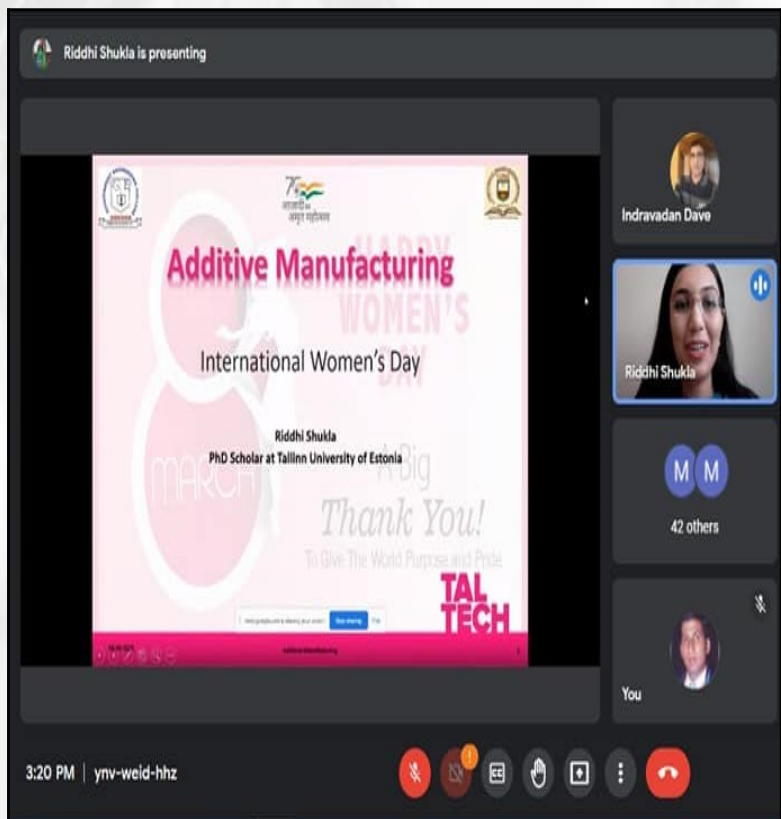
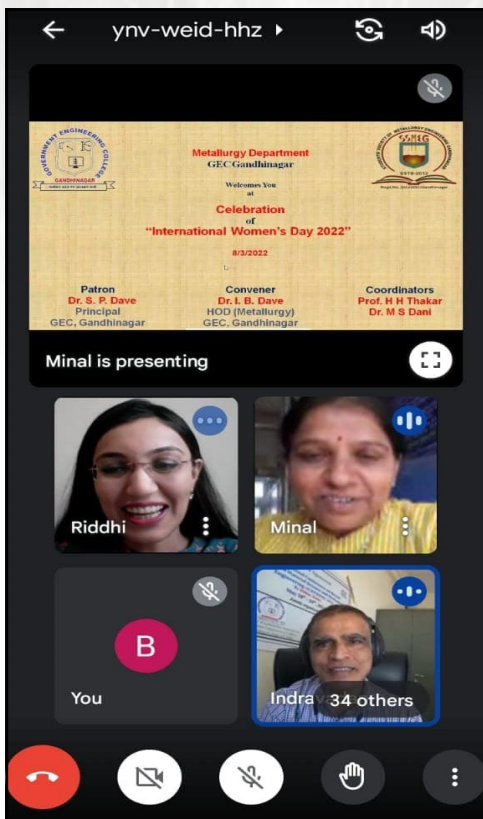
Alumni Experts and faculty members have shared the memories, Faculty members from Metallurgy Engineering have participated in this event.

Sr. No.	Time	Expert Details	Topic
1	10:00 to 11:00 am	<b>Mr. Divyaprakash Thakar</b> (Quality Engineer) Magna International, Canada	Automotive Standards
2	11:00 to 12:30 pm	<b>Mr. Gaurav Vadaliya</b> (Quality Engineer) MetalX Testing Facilities, Rajkot	Overview of Steel Making Process



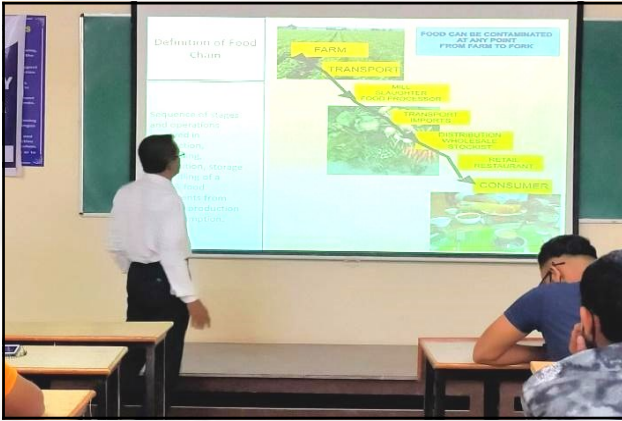
# INTERNATIONAL WOMAN'S DAY

GEC, Gandhinagar Metallurgy dept. has celebrated "International Woman's Day -2022" on 8/3/2022 by organising expert webinar on "Additive manufacturing" which was delivered by Female Alumni Miss. Ridhhi Shukla (pursuing her PhD from Tal -Tech Tallinn, University of Estonia, Europe). Program was inaugurated in the presence of Dr. I B Dave (HOD Metallurgy Dept.). More than 60 participants have been benefited by the expert talk on additive manufacturing. This program was organised by Prof. H H Thakar and Dr. M S Dani in association with SSMEG.



# ONE DAY TRAINING ON FOOD SAFETY SUPERVISOR

Metallurgy dept. GEC, Gandhinagar has organised one day training on “Food safety supervisor” Training was offered by Mr. Samar Paira (Retd. Food Safety Officer - Indian Railway). More than 80 participants from semester 4, semester 6 and faculty members have been benefited by the one day training on Food safety supervisor. This program was organised by Prof. H H Thakar and Prof. B R Rana in association with SSMEG and Digital Skill Certification, Mohali. Program was concluded by vote of thanks by Prof B R Rana and special thanks to Mr. Ashish Patel for background support.



# INTERNATIONAL YOGA DAY

8<sup>th</sup> International Yoga Day was celebrated by Metallurgy department GEC Gandhinagar on 21/6/2022 9:00 AM onwards, which was coordinated by NSS unit GEC Gandhinagar. Faculty of Metallurgy department has performed various Yoasanas and Pranayams under the guidance of Prof. D V Mahant.



## “STUDENT ACTIVITIES”

Students of 6th semester metallurgy department GEC Gandhinagar visited expo on **“Building a climate resilient Gujarat”** at Science city Ahmedabad along with Head of the Department, Metallurgy, Dr. I B Dave on 23/02/2022. More than 35 students visited the expo and gained the benefit of sharing knowledge various exhibitions at science city.



Gujarat Vigyan Sammelan (GVS 2022) one day online program on **“Ancient Indian Metallurgy”** on February 2nd, 2022 was organized by Metallurgy department, GEC Gandhinagar. This program was coordinated by Prof Dr. Daulat Sharma and Mr. Suraj Dabhekar. The opening topic was ‘The Mysterious Iron Pillar of Delhi: Why has it not rusted?’ delivered by Dr. Sunil Kahar, MSU, Baroda. The second topic was ‘Ancient Indian Non-Ferrous Metallurgy’ delivered by Dr. I. B. Dave, GEC Gandhinagar. The third topic was ‘Ancient Indian Powder Metallurgy’ delivered by Dr. V. J. Rao, MSU, Baroda. The Fourth topic was ‘Metal Joining from Ancient ages to Modern Technology’ delivered by Mr. Urvesh Vala, L&T, Chiyoda. Participants got complete exposure to ancient metallurgical processes in these sessions. The Fifth topic was ‘Metals in Ancient India’ delivered by Dr. Daulat Sharma, GEC Gandhinagar. The Sixth and last topic was ‘Iron Making in Ancient India’ delivered by Mr. Yakshik Chokshi, GP, Rajkot. Participants got exposure to ancient metallurgical materials and processes as well as ancient technologies. Students from 4th, 6th and 8th semester of Metallurgy Dept. GEC Gandhinagar attended and benefited by the expert sessions.

## STUDENT ACTIVITIES

SSIP awareness program was arranged online by SSIP cell GEC Gandhinagar on 13/01/2022. Alumnus of Metallurgy Department GEC Gandhinagar Mr. Aasif Mansuri Shared his journey of successful completion and achievements during SSIP 1.0. More than 55 students attended this program online on M S Teams platform.



## STUDENT ACHIEVEMENTS



It was a proud moment for Metallurgy department GEC Gandhinagar as final year student Mr. Manan Patel (170130121038) has been awarded **Gold Medal** by GTU at 11th annual convocation held on 27/01/2022.

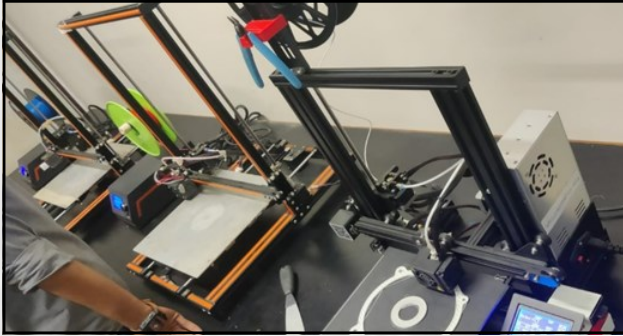
## OPEN HOUSE EVENT

Open House-Poster Presentation event had been organized on 21st April 2022, in which 2nd and 3rd year Metallurgy program students were given an opportunity to present their innovative ideas through a poster presentation. As per the AICTE Model curriculum, final year BE Metallurgy program students have completed their one-semester industrial internship with a stipend program. They shared their internship experience with the current students.



## TECHNICAL/ INDUSTRIAL VISIT

An institutional one day visit was organised by GEC Gandhinagar, Metallurgy Department to PDEU on 4th March coordinated by Dr..P. K. Nanavati and Prof. H. H. Thakar. It was held in regard to enlighten the students on Material Processing covering 3D Printing by polymer resin, Metal 3D Printing by iFusion SF1 and Additive Manufacturing with Welding. About 38 students attended this institutional visit .



## “IFEX 2022”

IFC 70th Indian Foundry Congress and IFEX 2022 exhibition was held on 18th April at Helipad Ground, Gandhinagar. Students were accompanied by Prof. B. R. Rana, Dr. M. S. Dani and Prof. D. V. Mahant for the very same. The students got an insight on Foundry technology and the existing companies in the foundry industry. About 45 students attended this institutional visit . About 30 students attended this industrial visit.





## RESEARCH ACTIVITIES

Research Paper counter (Jan 2019 onwards)	Previously published	Addition	Total
	33	6	39

Sr. No.	Title of the Paper	Authors	Publication
1	Performance Improvement Of Aluminium Sacrificial Anode By Magnesium Addition	Vidhi A Mistry* Dr. Minal S Dani Dr. Indravadan B Dave	Dogo Rangsang Research Journal, Vol 12 issue 1 Jan 2022
2	Influence Of Magnesium On Mechanical Properties And Microstructure Of Pure Aluminum	Vidhi A Mistry* Dr. Minal S Dani Dr. Indravadan B Dave	Compliance Engineering Journal, Vol 13, Issue 1, Jan 2022
3	A Review on Effect of Alloying Element on Aluminium Anode	Vidhi A Mistry* Dr. Minal S Dani Dr. Indravadan B Dave	GIT-Journal of Engineering and Technology, Volume 1, 2022
4	Review on Gas Tungsten Arc Welding of Stainless Steel and Mild Steel Plates	Achal Sharma Bhagyesh Shukla* Keval Solanki Dr. Daulat Kumar Sharma Naishadh P. Patel	GIT-Journal of Engineering and Technology, Volume 1, 2022
5	Review on Effect of Heat Treatment on Properties of AA 2024	Akash Patel* Ashik Patel Suketu Parmar Harshdkumar Jadav	GIT-Journal of Engineering and Technology, Volume 1, 2022
6	Augmentation in depth of penetration of hastelloy C-22 by FATIG welding	Dixit Patel Suketu Jani Darshit Shah	Advances in industrial and manufacturing engineering, Vol 4, March 2022

## PLACEMENTS

Sr. No.	En. No.	Name of Student	Name of Industry/Institute
1	180130121003	AYUSH BHARATBHAI BHUVA	SKY TECHNOCAST PVT. LTD. KATHVADA G.I.D.C AHMEDABAD
2	180130121015	ARADHYA KHARE	UNITECH METALLURGICAL SERVICES, CHANGODAR, AHMEDABAD
3	180130121020	PRASHANT NAKUM	SHILPAN STEELCAST LTD, RAJKOT
4	180130121029	AVI RAMESHBHAI PATEL	UNITECH METALLURGICAL SERVICES, CHANGODAR, AHMEDABAD
5	180130121042	YATIN PATEL	BAHETI METAL AND FERRO ALLOYS LTD. DAHEGAM
6	180130121043	PIPALIYA UDITKUMAR S	VISHAL FOUNDRY, RAJKOT
7	180130121056	PARTH SHARMA	MANGALAM STEELCAST PVT. LTD. VADODRA
8	180130121058	POOJA SOLANKI	TCR ADVANCED ENGINEERING MAKARPURA GIDC VADODRA
9	180133121019	JEET RAVAL	MANGALAM STEELCAST PVT. LTD. VADODRA
10	190133121008	SHIVAM RAJESHBHAI HIRANI	BHAGWATI SPHEROCAST PVT.LTD. ODHAV
11	190133121015	JIGNESH CHANDRAKANTBHAI PATEL	BAHETI METAL AND FERRO ALLOYS LTD. DAHEGAM
12	190133121017	JAYKUMAR C. SANKHAVARA	GODREJ & BOYCE MFG. CO. LTD, DAHEJ
13	190133121018	DINESH SOLANKI	ZINDAL SAW LTD, GANDHIDHAM
14	190133121020	ARPIT NITESHBHAI THUMMAR	VISHAL FOUNDRY RAJOT
15	180130121045	JANVI DHIRENBHAI RATHOD	UNITECH METALLURGICAL SERVICES, CHANGODAR, AHMEDABAD
16	170130121006	NIRAJKUMAR D. CHAUDHARY	HIGHER EDUTCATION, CDS
17	180130121021	VRAJ NITINKUMAR NAYI	HIGHER EDUTCATION
18	180130121050	AYUSH SHAH	HIGHER EDUTCATION
19	180130121054	MANISHEKHAR SHAHI	HIGHER EDUTCATION
20	180130121055	PARIMALKUMAR SHARMA	HIGHER EDUTCATION
21	180130121061	MANAN NIKUNJKUMAR THEKDI	HIGHER EDUTCATION
22	190133121006	BHARGAV KIRITBHAI DUDHAT	HIGHER EDUTCATION, CSWIP
23	190133121007	SAURABH SANJAY GAWANDE	HIGHER EDUTCATION, MSU VADODARA
24	190133121019	SHUBHAM DILIP TALEKAR	HIGHER EDUTCATION
25	190133121012	MANAN ARUNKUMAR NIRMAL	HIGHER EDUTCATION, MSU VADODARA
26	180130121053	NAMAN DINESHBHAI SHAH	HIGHER EDUCATION

## TRAINING/INTERNSHIP (2 WEEKS)

During 20/6/2022 to 9/7/2022, all the students of 6th semester Metallurgy, have undergone 2 weeks training program in reputed industries as listed below as a part of GTU curriculum.

Sr. No.	En. No.	Name of Student	Name of Industry/Institute
1	170130121017	KANJARIYA KEYUR BHARATBHAI	GREY NODULE INDUCTOCAST PVT. LTD. AHMEDABAD
2	180130121007	CHAUHAN MEET VISHNUBHAI	C.G. METAL LAB, CHHATRAL
3	180130121014	KATHIRIYA DHURVAL DINESHBHAI	GREY NODULE INDUCTOCAST PVT. LTD. AHMEDABAD
4	190130121001	CHURAKKATE DIYA SUBHASH	METALAB ENTERPRISE, AHMEDABAD
5	190130121002	DAVE ANIKET NIKUNJ	MET-HEAT ENGINEERS PVT LTD VADODARA
6	190130121003	DESAI SHIVANSHI UMESH	TEST WELL LABORATORIES
7	190130121007	JANI PRIYANKA PARESHBHAI	MET-HEAT ENGINEERS PVT LTD VADODARA
8	190130121008	KHETANI PRANAY RAJESHBHAI	ASTRON CAST INDUSTRY, AHMEDABAD
9	190130121009	KHUNT JAYMIL NIKETANBHAI	ACCUTECH PVT.LTD, AHMEDABAD
10	190130121010	KORDE SHIVAM KHEMRAJ	WELSPUN CORP. LTD. ( STEEL DIVISION), KUTCH
11	190130121011	KUMAR RAJ JITENDRA	GULFNDE INDUSTRIAL SERVICES, AHMEDABAD
12	190130121012	MADHU KUMARI	DIVINE METALLURGIST PVT LTD, AHMEDABAD
13	190130121014	MEGHANI ANKUSH DILIPBHAI	TEST WELL LABORATORIES, AHMEDABAD
14	190130121015	MUNSHI MOHAMMEDAASIM M	GULFNDE INDUSTRIAL SERVICES, AHMEDABAD
15	190130121017	PANDEY ANURAG SHIVAKANT	GUJARAT FOUNDRIES, VATVA, AHMEDABAD
16	190130121018	PATANI JAIMIN KALIDAS	GUJARAT FOUNDRIES, VATVA, AHMEDABAD
17	190130121019	PATEL KEVIN MANISHBHAI	AMIDEEP ALLOYS, NARODA, AHMEDABAD
18	190130121020	PATEL LOVE SAMIRKUMAR	MET-HEAT ENGINEERS PVT. LTD. VADODARA
19	190130121021	PATEL NIDHI KAMLESHBHAI	MET-HEAT ENGINEERS PVT. LTD. VADODARA
20	190130121022	PATEL NISARG PRAJESHBHAI	ENPEE INDUSTRIES, BILIMORA
21	190130121023	PATHAN ALTAMAS MOHD AHMED	GULFNDE INDUSTRIAL SERVICES, AHMEDABAD
22	190130121024	PATHAN MOHD IRFAN	GULFNDE INDUSTRIAL SERVICES, AHMEDABAD
23	190130121025	PITHWA VIRAJ BHARATBHAI	UNIQUE FERROCAST, RAJKOT
24	190130121027	RITUL	DIVINE METALLURGIST PVT LTD, AHMEDABAD
25	190130121031	SHAH SIDDHARTH SANJAY	WELSPUN STEELS LTD, ANJAR, KUTCH
26	190130121032	KUSHAGRA SINGH	DIVINE METALLURGIST PVT LTD, AHMEDABAD

## TRAINING/INTERNSHIP (2 WEEKS)

Sr. No.	En. No.	Name of Student	Name of Industry/Institute
27	190130121033	SRIVASTAVA SHRUTI BHUNESH	METALAB ENTERPRISE, AHMEDABAD
28	190130121036	KEVAL TRAPASIYA	ACCUTECH PVT.LTD, AHMEDABAD
29	190133121004	DAVE KEVAL DINESHBHAI	PITHWA ENGINEERING WORKS, RAJKOT
30	200130121501	THAKER BHARGAV RAJESHKUMAR	SANKALP BRASS INDUSTRY, JAMNAGAR
31	200130121502	HARIPARA NAVNEET SURESHBHAI	DEEP INDUSTRY, AHMEDABAD
32	200130121503	PATEL BHAVYANSHUKUMAR ATULBHAI	SHREE RAM METAL CAST, VADODARA
33	200130121504	PATEL ABHISHEK JASHUBHAI	JINDAL SAW LTD, SAMAGHOGA KUTCH
34	200130121505	SALI SHUCHIVRAT MILIND	Q TECH TESTING SERVICES, SURAT
35	200130121506	KOTHIWALA TRUSHAR RAJESHBHAI	Q TECH TESTING SERVICES, SURAT
36	200130121507	WARULKAR SAURABH SHAMRAO	MINERAL AND METAL TESTING SERVICES NAGPUR
37	200130121508	ITANKAR NIRAJ GAJANAN	MINERAL AND METAL TESTING SERVICES NAGPUR
38	200130121509	BARAD NISARGSINH NARENDRASINH	UNIQUE FERROCAST, RAJKOT
39	200130121510	YADAV RAHUL PRAMOD	BHILAI STEEL PLANT, SAIL CHHATTISGARH
40	200130121511	GOND ABHISHEK DHARMENDRA	Q TECH TESTING SERVICES, SURAT
41	200130121512	PARMAR PARTH PRAMODBHAI	SHRENO ENGINEERING LTD, VADODARA
42	200130121513	NEWRA SAURABH RAJKUMAR	DIVINE METALLURGY PVT LTD, AHMEDABAD
43	200130121514	PAWAR VEDANT MANISHKUMAR	Q TECH TESTING LAB, SURAT
44	200130121515	RAJYAGURU JAIMIN ATULKUMAR	AM/NS, HAZIRA, SURAT
45	200130121516	RAHATE VAIBHAV CHANDRASHEKHAR	MINERAL AND METAL TESTING SERVICES NAGPUR, MAHARASHTRA
46	200130121517	KALE TANMAY SHESHRAO	MINERAL AND METAL TESTING SERVICES NAGPUR MAHARASHTRA
47	200130121518	THAWARE PRATIK NAMDEORAO	MINERAL AND METAL TESTING SERVICES NAGPUR MAHARASHTRA
48	200130121520	BRAHMANE MRUNAL BHUPENDRA	METALAB ENTERPRISE, AHMEDABAD
49	200130121521	BHANDERI JAY RASIKBHAI	SANKALP BRASS INDUSTRIES, JAMNAGAR
50	200130121522	ANTURKAR SANDEEP SHANKAR	MINERAL AND METAL TESTING SERVICES NAGPUR MAHARASHTRA
51	200130121523	KORADIYA RUCHITKUMAR GOPALBHAI	SNIS INDIA LLP, SURAT

## TRAINING/ACTIVITY ATTENDED BY FACULTY

Sr. No.	Faculty	Title of Training/Activity	Duration	Organizer
1	Dr. I B Dave	Has been appointed as one of the Editorial Board Members in VIT Press International Journal of Metallurgical Engineering ( VITP - IJMEE )	13/01/2022	VIT press, Int. Journal of Metallurgical Engineering
		Has been appointed as one of the Editor - in - Chief in VIT Press International Journal of Heat Treatment and Surface Engineering ( VITP - IHTSE )		
		Has been appointed as one of the Editor - in - Chief in VIT Press International Journal of Materials and Manufacturing Processes ( VITP - IJMMP )		
		Has been appointed as one of the Editor - in - Chief in VIT Press International Journal of Minerals Engineering ( VITP - IJMINE )		
		Invited as guest of honor at technical talk on "Quality enhancement trends in failure analysis"	13/05/2022	Institute of Engineers (India)
2	Prof. S I Patel	Successfully completed the course Materials Science and Engineering with a consolidated score of 61 %	Jan-Mar2022	NPTEL - AICTE
3	Dr. D G Sharma	Successfully completed the AICTE - ISTE approved Orientation / Refresher Program on " Non Destructive Testing "	04/01/2022 to 09/01/2022	Tolani Foundation Gandhidham Polytechnic
		Successfully completed the course Materials Science and Engineering with a consolidated score of 82 %	Jan-Mar2022	NPTEL - AICTE
		Invited as session chairman at one day symposium on Innovation and Development in Science and Technology.	11/05/2022	Vigyan Gurjari, MSU
		Has been appointed as one of the Editorial Board Members in VIT Press International Journal of Metallurgical Engineering ( VITP - IJMEE )	15/01/2022	VIT press, Int. Journal of Metallurgical Engineering
		Has been appointed as one of the Editorial Board Members in VIT Press Intentional Journal of Alloys and Compounds ( VITP - IJALC )		
		Has been appointed as one of the Editorial Board Members in VIT Press International Journal of New Scientist ( VITP - IJNESC )		
Has been appointed as one of the Editorial Board Members in VIT Press International Journal of Machine Tools and Manufacture ( VITP - IJMTM )				
Has been appointed as one of the Editorial Board Members in VIT Press Int. Journal of Heat Treatment and Surface Engineering ( VITP – IJHTSE )				
4	Dr. M S Dani	Successfully completed DTE approved GUJCOST sponsored one week online FDP on " Metallurgy For All "	21-25 February 2022	Metallurgy Department , GEC-Gn.
5	Prof. D V Mahant	Successfully completing the course Materials Science and Engineering with a consolidated score of 77 %	Jan-Mar2022	NPTEL - AICTE
6	Prof. B R Rana	Successfully completing the course Principles of Casting Technology with a consolidated score of 65 %	Jan-Mar2022	NPTEL - AICTE
7	Prof. H H Thakar	Successfully completing the course Materials Science and Engineering with a consolidated score of 70 %	Jan-Mar2022	NPTEL - AICTE

# MEDIA COVERAGE

## સરકારી ઈજનેરી કોલેજ, ગાંધીનગર ખાતે Alumni Meet 2022નું આયોજન

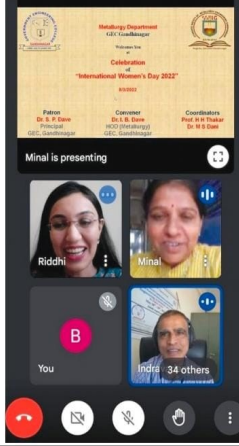


ગાંધીનગર, તા.૨૬ ઉચ્ચ શિક્ષણના તાબા હેઠળના મેટલર્જી વિભાગ, સરકારી ઈજનેરી કોલેજ, સેક્ટર-૨૮, ગાંધીનગર ખાતે સંસ્થાના આચાર્ય ડૉ. એસ. પી. દવે તથા મેટલર્જી વિભાગના વડા ડૉ. આઈ. બી. દવે ના માર્ગદર્શન હેઠળ 'Alumni Meet

2022" નું મેટલર્જી વિભાગના ભૂતપૂર્વ વિદ્યાર્થીઓના સંયોજન (સ્ટુડન્ટ સોસાયટી ઓફ મેટલર્જી એન્જિનિયરીંગ ગાંધીનગર) દ્વારા તારીખ ૨૬ એપ્રિલના રોજ કરવામાં આવ્યું હતું. આ તાલીમના સંયોજક મેટલર્જી વિભાગના પ્રાધ્યાપકો શ્રી. એચ. ઠાકર તથા ડૉ. એમ. એસ. દાની હતા.

સામાહિક ઓનલાઈન વેબીનારનું ઉદ્ઘાટન મેટલર્જી વિભાગના વડા ડૉ. આઈ. બી. દવે ની ઉપસ્થિતિમાં થયું હતું. જેમાં વિભાગના ભૂતપૂર્વ વિદ્યાર્થી દિવ્યપ્રકાશ ઠાકર (Quality Engineer, Canada) દ્વારા ઓનલાઈન તથા ગૌરવ વડલિયા (કવોલિટી મેનેજર, રાજકોટ) દ્વારા ઓફલાઈન એક્સપર્ટ લેક્ચર આપવામાં આવ્યું હતું. જેમાં ૭૦ જેટલા સ્પર્ધકોએ ભાગ લીધેલ હતો. અંતે SSMEG દ્વારા સંસ્થાના આચાર્ય ડૉ. એસ. પી. દવે ના હસ્તે ગૌરવ વડલિયા, લક્ષીત રંગણી, ધ્રુવીન તેજાણી તથા પાર્થ મોળા નું Alumni Entrepreneur તરીકે બહુમાન કરવામાં આવ્યું હતું.

## સરકારી ઈજનેરી કોલેજ, સે-૨૮



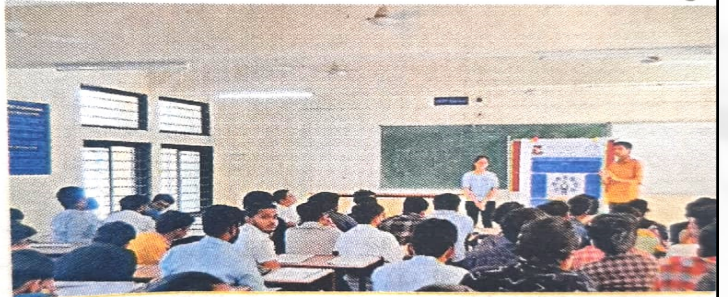
સરકારી ઈજનેરી કોલેજ, સે-૨૮ ખાતે આચાર્ય ડૉ. એસ. પી. દવેના માર્ગદર્શન હેઠળ વિશ્વ મહિલા દિનની ઉજવણી કરાઈ હતી. જેમાં ભૂતપૂર્વ વિદ્યાર્થી રિધ્ધી શુક્લ દ્વારા એડીટીવ મેન્યુફેક્ચરીંગ વિષય પર વિદ્યાર્થીઓને માર્ગદર્શન આપવામાં આવ્યું હતું. આ ઓનલાઈન વેબીનારનું ઉદ્ઘાટન મેટલર્જી વિભાગના વડા ડૉ. આઈ. બી. દવેની ઉપસ્થિતિમાં થયું હતું. આ વેબીનારના સંયોજક મેટલર્જી વિભાગના પ્રાધ્યાપકો એચ. એચ. ઠાકર તથા ડૉ. એમ. એસ. દાની હતા.

## સરકારી ઈજનેરી કોલેજમાં એલ્યુમનિ મિટ

સરકારી ઈજનેરી કોલેજ પાછળ સેક્ટર-૨૮ ખાતે તાજેતરમાં મેટલર્જી વિભાગ દ્વારા ભૂતપૂર્વ વિદ્યાર્થીઓ માટે યોજાયેલા કાર્યક્રમમાં તાલીમ આપવામાં આવી હતી. જેમાં વિદ્યાર્થીઓ ઉત્સાહભરે જોડાયા હતા.



## સરકારી ઈજનેરી કોલેજમાં પોસ્ટર એક્ઝિબિશન યોજાયું



સે-૨૮ સ્થિત સરકારી ઈજનેરી કોલેજના મેટલર્જી વિભાગ દ્વારા ઓપન હાઉસ પોસ્ટર એક્ઝિબિશન ઇવેન્ટ યોજવામાં આવ્યું હતું. જેમાં વિદ્યાર્થીઓએ ઇન્ડસ્ટ્રીઝ-ઇન્ટર્ન ઇરમિયાન મેળવેલા ટેકનિકલ જ્ઞાન તેમજ અનુભવો, પોસ્ટરના માધ્યમથી જૂનિયર વિદ્યાર્થીઓ સાથે ચર્ચા કરી હતી. કુલ ૯૪ વિદ્યાર્થીઓએ ભાગ લીધો હતો.

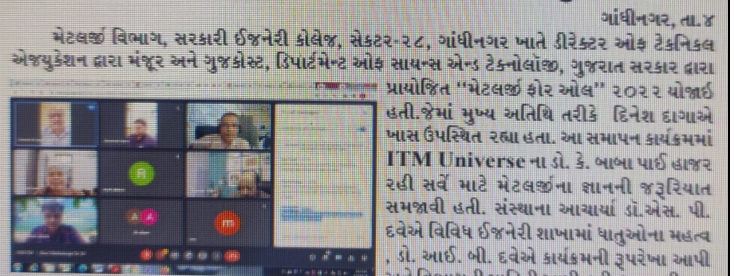
## મેટલર્જી વિભાગ સરકારી ઈજનેરી કોલેજ દ્વારા ઓપન હાઉસ-પોસ્ટર એક્ઝિબિશન ઇવેન્ટનું આયોજન



ગાંધીનગર, તા. ૨૩ મેટલર્જી વિભાગ, સરકારી ઈજનેરી કોલેજ સે-૨૮, ગાંધીનગર ખાતે ઓપન હાઉસ-પોસ્ટર એક્ઝિબિશન ઇવેન્ટનું આયોજન કરાયું હતું. જેમાં બી. ઈ. મેટલર્જી વિદ્યાશાખાના અંતિમ વર્ષના વિદ્યાર્થીઓએ તેમણે ઇન્ડસ્ટ્રી - ઇન્ટર્ન ઇરમિયાન મેળવેલા ટેકનિકલ જ્ઞાન તેમજ અનુભવો પોસ્ટરના માધ્યમથી બીજા અને ત્રીજા વર્ષમાં ભણતા વિદ્યાર્થીઓ

સાથે ચર્ચા કરી તેમને પ્રોત્સાહિત કર્યા હતા જેમાં કુલ ૯૪ વિદ્યાર્થીઓએ ભાગ લીધો હતો. આ સમગ્ર સફળ આયોજન સરકારી ઈજનેરી કોલેજ, સે-૨૮, ગાંધીનગરના પ્રિન્સિપાલ ડૉ. પ્રો. શ્વેતા પી. દવે, એસએસઆઈજ મેન્ટર, મેટલર્જી વિભાગના વડા ડૉ. પ્રો. આઈ. બી. દવે તથા મેટલર્જી વિભાગના એસએસઆઈપી કોર્ડિનેટર ડૉ. પ્રો. પી. કે. નાણાંવટીના સંયુક્ત માર્ગદર્શન હેઠળ થયું હતું.

## સરકારી ઈજનેરી કોલેજ ખાતે મેટલર્જી ફોર ઓલ સામાહિક ઓનલાઈન ફેકલ્ટી ડેવલોપમેન્ટ પ્રોગ્રામનું આયોજન



ગાંધીનગર, તા. ૪ મેટલર્જી વિભાગ, સરકારી ઈજનેરી કોલેજ, સેક્ટર-૨૮, ગાંધીનગર ખાતે ડિરેક્ટર ઓફ ટેકનિકલ એજ્યુકેશન દ્વારા મંજૂર અને ગુજકોસ્ટ, ડિપાર્ટમેન્ટ ઓફ સાયન્સ એન્ડ ટેકનોલોજી, ગુજરાત સરકાર દ્વારા પ્રાયોજિત "મેટલર્જી ફોર ઓલ" ૨૦૨૨ યોજાઈ હતી. જેમાં મુખ્ય અતિથિ તરીકે દિનેશ દાગાએ ભાસ ઉપસ્થિત રહ્યા હતા. આ સમાપન કાર્યક્રમમાં ITM Universe ના ડૉ. કે. બાબા પાર્ટ હાજર રહી સર્વે માટે મેટલર્જીના જ્ઞાનની જરૂરિયાત સમજાવી હતી. સંસ્થાના આચાર્ય ડૉ. એસ. પી. દવેએ વિવિધ ઈજનેરી શાખામાં ધાતુઓના મહત્વ ડૉ. આઈ. બી. દવેએ કાર્યક્રમની રૂપરેખા આપી અને વિભાગની માહિતી આપી હતી. આ તાલીમના સંયોજક મેટલર્જી વિભાગના પ્રાધ્યાપકો એચ. એચ. જાદવ તથા બી. આર. રાણા ના જણાવ્યા પ્રમાણે આ પ્રોગ્રામમાં મેટલર્જી ઈજનેરીના વિવિધ વિષયોનું તજજ્ઞો દ્વારા વિશ્લેષણ અને માર્ગદર્શન આપવામાં આવ્યું હતું. આ સામાહિક કાર્યક્રમમાં ગુજરાત ની સરકારી, અનુદાનિત અને બિનઅનુદાનિત ઈજનેરી કોલેજોના વિવિધ વિદ્યાશાખાના અધ્યાપકોએ તાલીમ મેળવી હતી.

## સરકારી ઈજનેરી કોલેજ ખાતે મેટલર્જી વિષયમાં ઓનલાઈન વેબીનાર યોજાયો

ગાંધીનગર, તા. ૧૮ સરકારી ઈજનેરી કોલેજ, સેક્ટર-૨૮, ગાંધીનગર ખાતે સંસ્થાના આચાર્ય ડૉ. એસ. પી. દવે ના માર્ગદર્શન હેઠળ સામાહિક ઓનલાઈન વેબીનાર "મેટલર્જી એન્ડ મટિરિયલ સાયન્સ" નું મેટલર્જી વિભાગના ભૂતપૂર્વ વિદ્યાર્થીઓના સંયોજન (સ્ટુડન્ટ સોસાયટી ઓફ મેટલર્જી એન્જિનિયરીંગ ગાંધીનગર) દ્વારા આયોજન કરવામાં આવ્યું. આ તાલીમના સંયોજક મેટલર્જી વિભાગના પ્રાધ્યાપકો એચ. એચ. ઠાકર તથા ડૉ. એમ. એસ. દાની હતા. સામાહિક ઓનલાઈન વેબીનારનું ઉદ્ઘાટન મેટલર્જી વિભાગના વડા ડૉ. આઈ. બી. દવે તથા MGITER, નવસારી ના આચાર્ય ડૉ. જી. એચ. ઉપાધ્યાય ની ઉપસ્થિતિમાં થયું હતું.

## સે-૨૮ ઈજનેરી કોલેજમાં મેટલર્જી ફોર ઓલનું આયોજન

સે-૨૮ સરકારી ઈજનેરી કોલેજના મેટલર્જી વિભાગ દ્વારા ઓનલાઈન ફેકલ્ટી ડેવલોપમેન્ટ પ્રોગ્રામ મેટલર્જી ફોર ઓલનું આ વર્ષે પણ આયોજન કરવામાં આવ્યું હતું. આગામી ૨૧ થી ૨૫ ફેબ્રુઆરીથી ઇરમિયાન આ પ્રોગ્રામ યોજાશે. આ સાપ્તાહિક પ્રોગ્રામ હેઠળ વિવિધ ઈજનેરી વિદ્યાશાખાના અધ્યાપકો, ઇન્ડસ્ટ્રીયાલીસ્ટ તથા રીસર્ચ ઇન્સ્ટીટ્યુટના રિસર્ચ સ્કોલર મળીને અંદાજે એકસો લોકો તાલીમ મેળવશે.

## Advanced Trends in Metallurgy

### Introduction:-

The scientific novelty of this paper consists in the analysis of problems of weldability and the systemic concept formulation of a relationship between the steelmaking, weldability and manufacturing of welded structures for low temperature and cryogenic service. The weldability of high-strength steels is linked to steelmaking, thermomechanical processing, and the microstructural design of steels, based on a three-level system of processes, as shown in Figure. The high quality of the manufacturing of welded structures is based on the quality in levels: steelmaking, welded joint, and welded structure. The most serious problem is the anisotropy and microstructure chemical-heterogeneity due to welding thermal cycle on level II.

The anisotropy degree of the weld microstructure depends on the susceptibility of the initial microstructure of the rolled steels to the welding thermal cycle. In our opinion, advanced current trends, and methods in the field of metallurgy and

weldability for improving the mechanical properties, microstructure, and viscoplasticity of high-strength steels and welded joints can present as system, as shown in Figure.

### Problem of Fracture of Steels at Low Temperatures:-

The main tasks in manufacturing welded structures for low temperature services are to increase reliability and durability and reduce weight and cost. Relevant tasks are increasing the viscoelasticity of steels, reducing the sensitivity to embrittlement and hydrogen cracking, and increasing the cyclic loads at low temperatures. Pous-Romero studied the critical temperature of ductile-brittle transition and the ductile fraction in low-temperature tests of STM SA508 Gr.3 low-alloy hull steel, %:  $\delta$  0.25 C; 1.2–1.5 Mn; 0.45–0.6 Mo; 0.4–1 Ni;  $\delta$  0.25 Cr; 0.15–0.35 Si and proved that the impact energy decreases from 230 J at plus 50 °C to 120 J at a

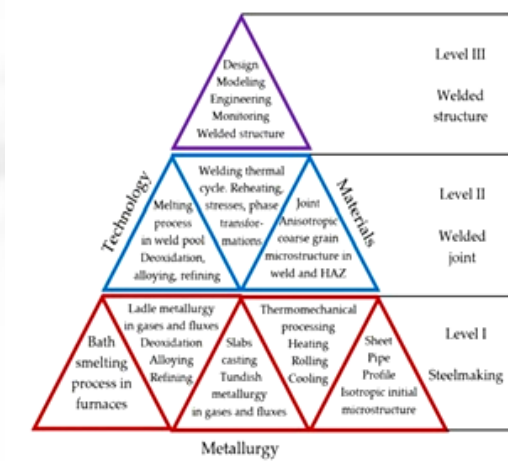


Figure Multi-level system of processes for the manufacturing of welded structures.

critical temperature of minus 50 °C and to 10 J at minus 100 °C with 0% of ductile fracture. Most fractures in steels occur during the formation and propagation of cracks initiating in local stress concentrations, in dislocation clusters, and at intergranular and interphase boundaries, as well as at nonmetallic sharp-edged shape inclusions. Brittle fractures typically involve little energy absorption and occur by splitting (chip-ping) as the crack propagates through the atomic plane. Ductile fractures occur during formation of microporous coalescence, in which the initiators of fracture are dispersed inclusions and carbides distributed in the viscous matrix. DE cohesive fractures occur during the microfracture along grain boundaries, which have a lower strength than the grain. A decrease in the strength of intergranular boundaries occurs during segregation of brittle and harmful impurities, as well as during the corrosive influence.

The analysis of research in the field of metallurgy and weldability shows the significant potential of advanced steels for low temperature and cryogenic application. For cold-resistant welded structures HSLA, bainitic, duplex, steels are recommended. For cryogenic welded structures austenitic Cr-Ni-N-, Mn-, 9% Ni-, Mn-TRIP, and TWIP steels are recommended. The future of the welding of cold-resistant and cryogenic steels lies in microstructure control, reducing the anisotropy of the welded joint -based low heat input in the arc, laser, and hybrid welding with filler REM-containing wires.

### References:

- metals-11-01891-v2.pdf
- Saud S et al. Influence of Ti additions on the martensitic phase transformation and mechanical properties of Cu–Al–Ni shape memory alloys. Journal of Thermal Analysis

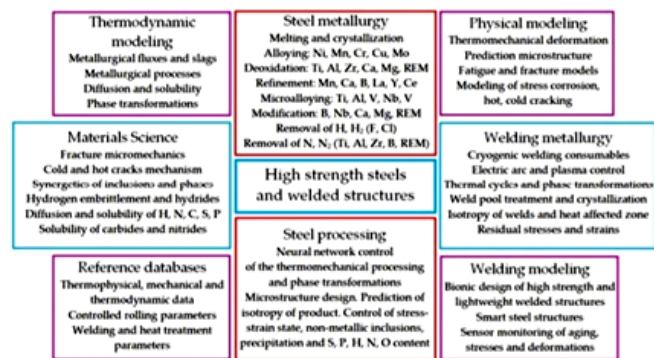


Figure:- System of advanced trends and methods in the metallurgy and weldability of high-strength steels for welded structures for low temperature and cryogenic service.

## Cu-Al-Ni Shape Memory Alloys (SMAs)

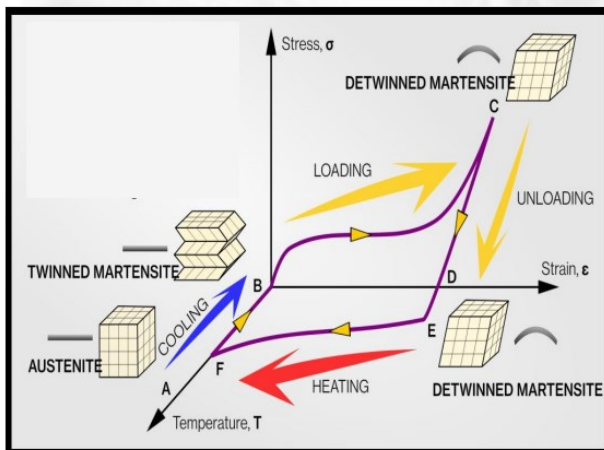
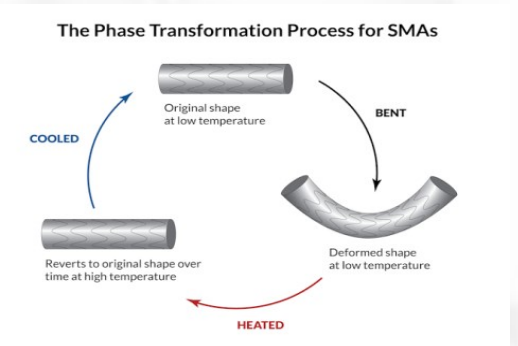
### • INTRODUCTION

SMAs are a class of smart material that can remember their shape. You bend them and they will return to their original shape when heated. SMAs have this property because of two unique intermetallic phases. We call these “austenite” and “martensite,” the same words used for steel, although these phases share nothing in common with steel. Cu-Al-Ni offers advantages over NiTi such as higher transformation temperatures.

### • WHAT IS THE SHAPE MEMORY EFFECT?

1. Suppose that your SMA starts at high temperature, in the austenite phase. It has a certain shape.

2. As you cool down the SMA, austenite will transform into martensite. The atoms shift slightly, but don't move much overall. There is no shape change. But notice that there is now a zig-zag line?



3. This is where detwinning will occur. Now if you bend the martensitic SMA, the bends will be accommodated by detwinning, not dislocation motion. Because the deformation was detwinning, each atom is still surrounded by its same neighbors.

4. If you heat the SMA so it turns back into austenite, the phase change happens again. Since the relative positions of each atom have not changed, when the atoms realign into austenite, they realign exactly as they were before they were deformed.

### • EFFECT OF ALLOYING ELEMENTS

⇒ Reducing the aluminium content below 12% can also improve the alloys' mechanical properties.

⇒ Adding manganese (approximately 2%) can reduce the transformation temperature.

⇒ while the addition of small quantities (approximately 1%) of boron, cerium, cobalt, iron, titanium, vanadium and zirconium are also commonly added to control grain size.

⇒ However, additions should be made carefully as they can upset the stability of the structure.

### • COMPOSITION

⇒ Aluminium 11-14%, Nickel 13-15%, Manganese 1-2%, Cobalt 0.8-1%, Boron 1%, Titanium 0.9-1.2%, balance copper.

### • ADVANTAGE OVER OTHER SMAs

• CuAlNi SMA's are popular due to their wide range of useful transformation temperatures.

• They are also the only SMA's that can be used at temperatures over 100°C.

• Compared to Ni-Ti SMA's, the CuAlNi alloys are much cheaper to make as they use cheaper raw materials and do not require sophisticated processing as do the NiTi alloys

### • APPLICATIONS

Aviation, Automobile, Robotization and control, Machine, Vitality, Synthetic handling, Warming and ventilation, Security and safety, Hardware, Jet engine, Actuator in automobile.

### • REFERENCES

1. Otsuka K, Wayman CM. Shape Memory Materials. Reprint. Illustrated ed. London, UK: Cambridge University Press; 1999/
2. Influence of Ti additions on the martensitic phase transformation and mechanical properties of Cu–Al–Ni shape memory alloys. Journal of Thermal Analysis and Calorimetry.
3. Dependence of the martensitic transformation characteristics on concentration in Cu–Al–Ni shape memory alloys. Materials Science and Engineering: A. 1999;273:380-384



# TECHNO RIDE

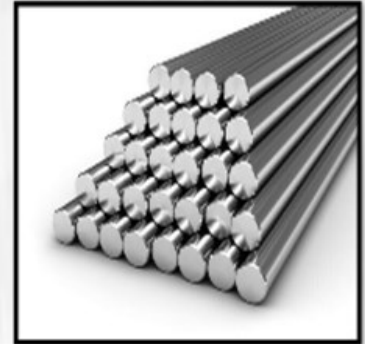
- By, Mr. Rahul Yadav 200130121510

## Nimonic-75

- **Introduction: -**

Nimonic-75 is an 80/20 Nickel-Chromium alloy with controlled addition of titanium and carbon. First introduced in the 1940s for turbine blades in the prototype whittle jet engines, it is now mostly used for sheet applications calling for oxidation and scaling resistance coupled with medium strength at high operating temperatures.

It is still used in gas turbine engineering and also for industrial thermal processing, furnace component and heat treatment equipment. It is readily fabricated and welded.



- **Nimonic-75 as an Advance Material: -**

Nimonic alloy are made up of nickel and chromium alloy. These alloys are characterized by their high temperature, low creep and high performance. Additives like Titanium and aluminium are used for enhancing the strength of the alloy.

- **Mechanical Properties of Nimonic-75:-**

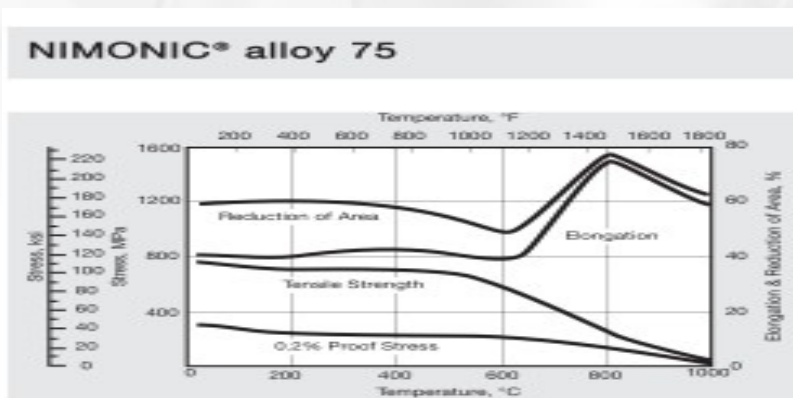


Figure 1. Tensile properties of NIMONIC alloy 75 bar.

- **Chemical Composition: -**

Carbon – 0.08-0.15%, Chromium – 18-21%,  
Copper – 0.5%, Iron – 5%, Manganese – 1%  
silicon – 1%, Titanium – 0.2-0.6%  
Nickel - Balanced.

- **Corrosion Resistance: -**

For weight loss after 100 hours at oxidation resistance (Continuous Heating)

Alloys	800°C	900°C	950°C	1000°C	1100°C
Nimonic-75	0.55%	1.18%	4.00%	6.66%	8.92%



- **Heat Treatment: -**

⇒ For Bar 30-60 Minutes at 1050°C followed by air cooling.

⇒ For sheet 5-10 Minutes 1050°C followed by air cooling or Before welding 5-10 minutes/ 1050°C/ AC+ An optional 10 Minutes/1050°C/AC.

- **Available Products: -**

Sheet, Strip, Fasteners, Plate, Round Bars, Forging stocks, Wire tubes and extruded Section.

Other Designation include AFNOR NC20T and DIN NICKR20TI and AICMA NI-P91HT.

- **References: -**

<https://www.azom.com/article.aspx?ArticleID=9416>

<https://www.specialmetals.com/documents/technical-bulletins/nimonic-alloy-75.pdf>

# ART GALLERY

- Photography by, Mr. Nihar Huprikar. 210130121504

## "THE MACRO WORLD - RESUSCITATION OF LIFE"



## ART GALLERY

### " एक पेड़ से रिश्ता "

"काश उस पौधे को जब वो छोटा था तब ही उखाड़ दिया होता,  
तो शायद आज वो जब इतना बड़ा पेड़ बन चुका है तब,  
उसके साथ जुड़ी हुई यादों को भुला के उसके फल की लालच में मेरे  
उसको  
काटने की नौबत ही नहीं आती,  
तब शायद एक पौधा उखड़ जाता,  
लेकिन लालच के ज़ज्बात से ये बाग उजड़ नहीं जाता !"

( यहां पेड़ एक रिश्ता है, वैसे ही उनकी यादें हैं, और फल रिश्ते में  
होने वाले समझोते )

( पेड़ काटना भी किसी अपने से रिश्ता काटने जितना ही बुरा हो  
सकता है )

-Written by Jainam Sakaria 180130121048

### "अनोखा ये सफर"

बड़ा अनोखा रहना ये सफर आपका,  
कुछ अलग सी बात लगी होगी आपको,  
कुछ पाया होगा तो कुछ खोए भी होगा आपने,  
ज़िंदगी ने कुछ गवाया होगा तो कुछ दिलाया होगा आपको,  
कुछ समाया होया तो कुछ संभला होगा अपने,  
कोई प्यारा इंसान पाया तो कुछ नियारे इंसानों को  
गवाया होगा अपने,  
कभी खुशी मैं रोना छुपाया आपने, तो कभी कभी रोते रोते खुश  
होलिय होंगे आप...  
क्यू की ..... बड़ा अनोखा रहा आपका ये सफर ...

-Written by Nisarg Patel 1901310121022



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