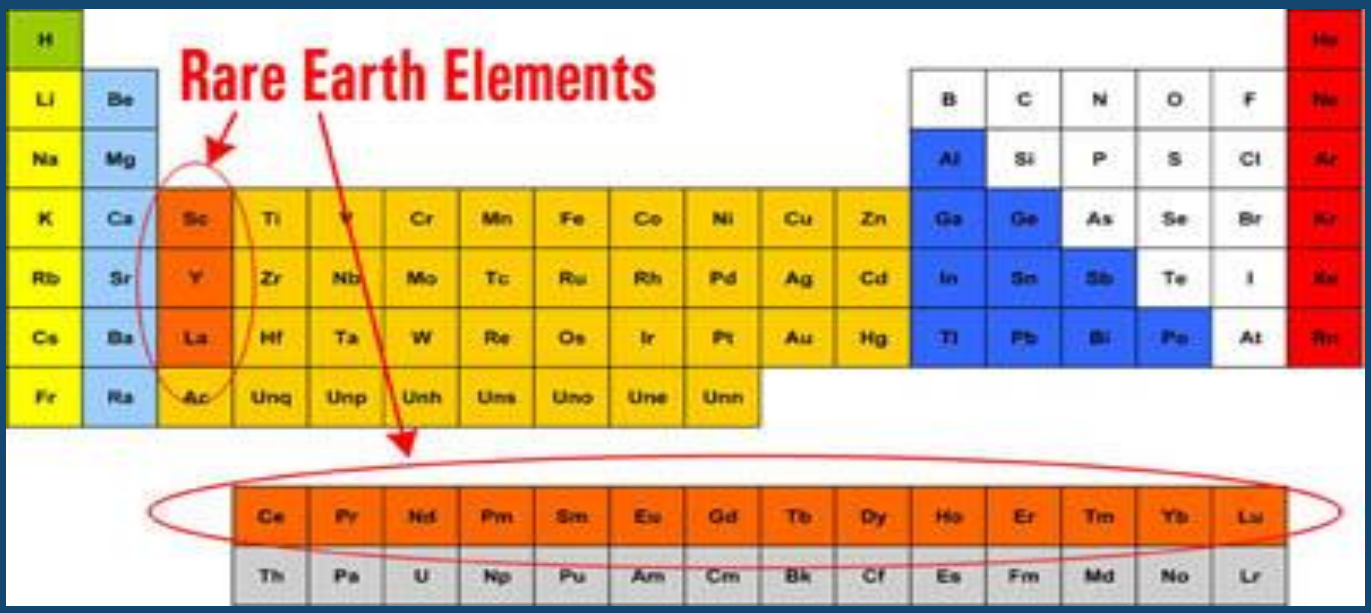
MEERUT INSTITUTE OF ENGINEERING & TECHNOLOGY, MEERUT

A NEWSLETTER OF DEPARTMENT OF MECHANICAL ENGINEERING

Mechzine VOLUME 3



DEPARTMENT OF MECHANICAL ENGINEERING

HOD MESSAGE

In today's fast-changing world with ever-growing challenges of limited resources and rapid climate changes, a new generation of Mechanical Engineers nurtured with necessary skills and innovative spirit is needed. Our attempt is to provide our students with a cheerful, productive and satisfying experience at all levels of their programme of studies so that they can explore the amazing world of Mechanical Engineering.

Our dedicated faculty tries to disseminate amongst the students the latest developments in Applied Mechanics & Design, Dynamics & Control, Thermo-fluids & Processes, Energy, Materials & Manufacturing, and Automation & Robotics.

Welcome to this world of machines.

Dr. Sanjeev Shukla
(Head of department)

FACULTY ADVISOR MESSAGE

I am happy that Department of Mechanical Engineering, Meerut Institute of Engineering and Technology, Meerut is bringing out a Newsletter. The college Newsletter will definitely help to showcase the activities that are happening in the campus. It also helps in building up teamwork which is very much needed today in the world of competition. It provides a platform for exposing the merits and academic achievements of the faculty. This enhances the documentation culture of the institute. This would definitely create an impact in the minds of readers, by way of providing larger visibility and dimension to the campus. I hope that this culture of releasing Newsletter continue forever and become a quoted example for all other colleges to follow.

Dr. Tushar Jain
Faculty Advisor
Newsletter Mechazine

ABOUT THE DEPARTMENT OF MECHANICAL ENGINEERING

To be truly innovative, mechanical engineers of the future need to understand the basics of mechanics, manufacturing, and systems while integrating aspects of other disciplines. With its collaborations across departments and institutions, the Department of Mechanical Engineering educates the engineers of the future while conducting leading-edge research in robotics and bio-systems, biomaterials, health and human augmentation, design, multifunctional materials, multiscale simulations.

Vision of the Department

To become a nationwide recognised department for research oriented quality technical education in line with emerging trends and evolving demands of society.

Mission of the Department

The mission of mechanical engineering department includes:

1. *To embrace excellent teaching learning techniques to provide practical quality education that is commensurate with the emerging trends and industry demands.*
2. *To promote research in interdisciplinary areas by forging collaborations with global industries and establishing state-of-the-art research facilities in order to develop among students innovative and creative capabilities.*
3. *To mentor & guide young technocrats & inculcate them with the spirit of entrepreneurship along with ethics, value & Eco-sensitivity.*

MECHANICAL CLUBS

***CNC Programming Club** is formed in year July 2017 to trained students in CNC Programming.*

CNC machining is a term commonly used in manufacturing and industrial applications. It is a subtractive manufacturing process which typically employs computerized controls and machine tools to remove layers of material from a stock piece-known as the blank or workpiece and produces a custom-designed part.

Mr. HC Bhatia
Assistant Professor

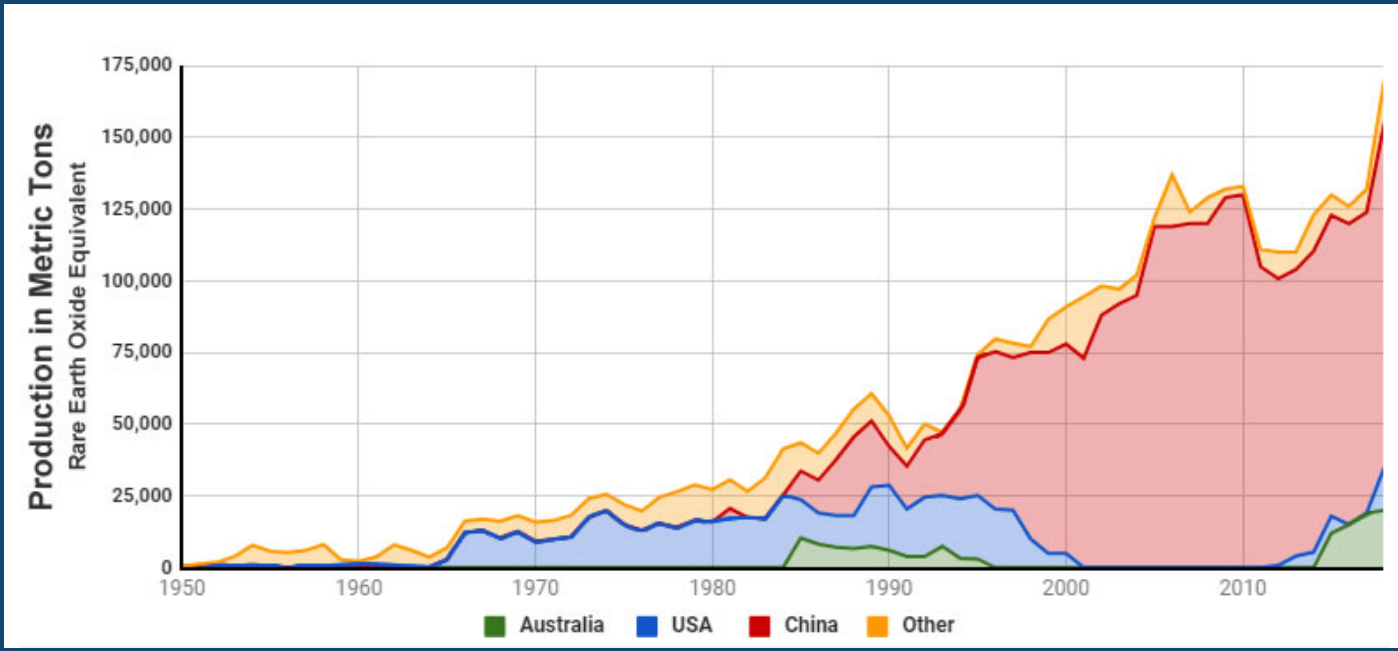
***Design Club** is formed in January 2016, to promote creativity and to increase the technical knowledge in the field of designing software like AutoCAD, Solid Edge, ANSYS, and FEMAP.*

Solid Edge is what it says – technologically superior 3D CAD, smart service and support that's always there, and a product architecture that's designed to take your design into the future.

Mr. Ankit Sharma
Assistant Professor

TECHNICAL ARTICLE

REE - Rare Earth Elements and their Uses



Rare Earth Element Production: This chart shows a history of rare earth element production, in metric tons of rare earth oxide equivalent, between 1950 and 2018. It clearly shows the United States' entry into the market in the mid-1960s when colour television exploded demand. When China began selling rare earths at very low prices in the late 1980s and early 1990s, mines in the United States were forced to close because they could no longer make a profit. [1] When China cut exports in 2010, rare earth prices skyrocketed. That motivated new production in the United States, Australia, Russia, Thailand, Malaysia, and other countries.

What Are Rare Earth Elements (REEs)?

Rare earth elements are a group of seventeen chemical elements that occur together in the periodic table (see image). The group consists of yttrium and the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium). Scandium is found in most rare earth element deposits and is sometimes classified as a rare earth element. The International Union of Pure and Applied Chemistry includes scandium in their rare earth element definition.

The rare earth elements are all metals, and the group is often referred to as the "rare earth metals." These metals have many similar properties, and that often causes them to be found together in geologic deposits. They are also referred to as "rare earth oxides" because many of them are typically sold as oxide compounds.

Uses of Rare Earth Elements

- ***Rare earth metals and alloys that contain them are used in many devices that people use every day such as computer memory, DVDs, rechargeable batteries, cell phones, catalytic converters, magnets, fluorescent lighting and much more.***
- ***During the past twenty years, there has been an explosion in demand for many items that require rare earth metals. Twenty years ago very few people owned a mobile phone, but today over 5 billion people own a mobile device. The use of rare earth elements in computers has grown almost as fast as cell phones.***
- ***Many rechargeable batteries are made with rare earth compounds. Demand for the batteries is being driven by demand for portable electronic devices such as cell phones, readers, portable computers, and cameras.***
- ***Several pounds of rare earth compounds are in batteries that power every electric vehicle and hybrid-electric vehicle. As concerns for energy independence, climate change, and other issues drive the sale of electric and hybrid vehicles, the demand for batteries made with rare earth compounds will climb even faster.***
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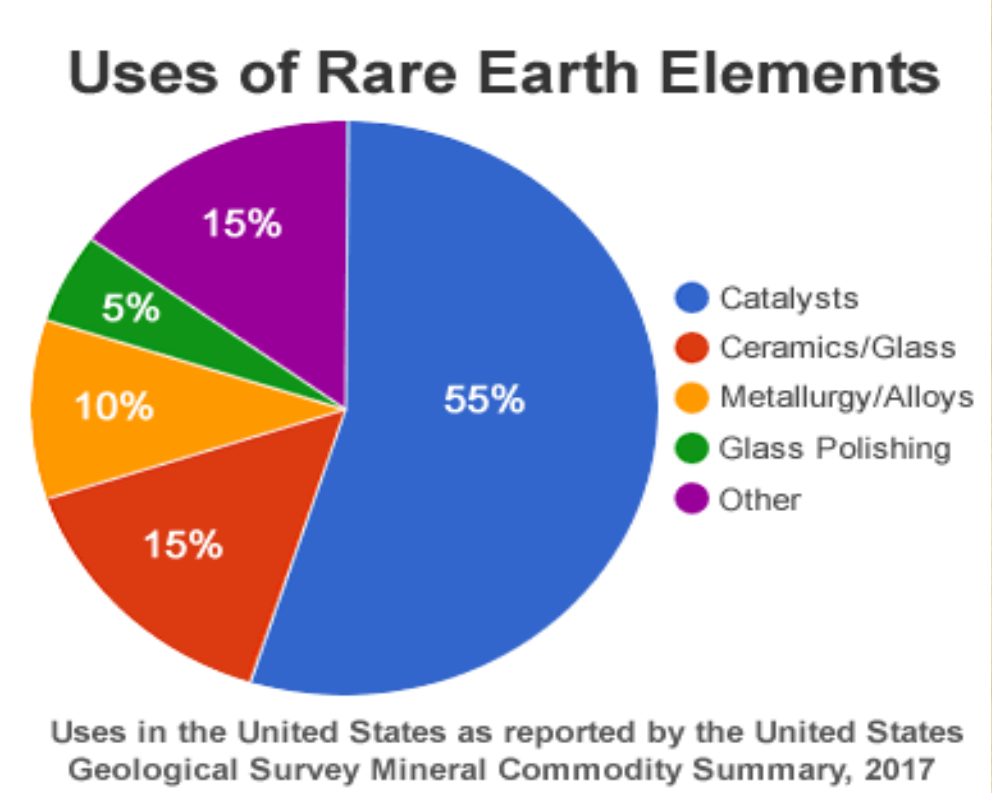

Uses in the United States as reported by the United States Geological Survey Mineral Commodity Summary, 2017

Critical Defense Uses

- ***Rare earth elements play an essential role in our national defense. The military uses night-vision goggles, precision-guided weapons, communications equipment, GPS equipment, batteries, and other defense electronics. These give the United States military an enormous advantage. Rare earth metals are key ingredients for making the very hard alloys used in armored vehicles and projectiles that shatter upon impact.***
- ***Substitutes can be used for rare earth elements in some defense applications; however, those substitutes are usually not as effective and that diminishes military superiority. Several uses of rare earth elements are summarized in the accompanying table.***

Defense Uses of Rare Earth Elements	
Lanthanum	night-vision goggles
Neodymium	laser range-finders, guidance systems, communications
Europium	fluorescents and phosphors in lamps and monitors
Erbium	amplifiers in fiber-optic data transmission
Samarium	permanent magnets that are stable at high temperatures
Samarium	precision-guided weapons
Samarium	"white noise" production in stealth technology

Did You Know? Most of the scandium used in the United States goes into aluminum-alloy baseball bats and other sports equipment [4]. Scandium is also used in semiconductors and specialty lighting. Image copyright iStockphoto / Dori OConnell.

Did You Know? Rare earth magnets are used in wind turbines. Some large turbines require two TONS of rare earth magnets. These magnets are very strong and make the turbines highly efficient. Rare earth magnets are used in turbines and generators in many alternative energy applications.

Did You Know? Prices and demand for rare earth materials have risen dramatically over the past decade. China produces about 90% of the supply. Deposits in Australia and the United States are going back into operation, and exploration in many new areas is progressing.

PLACEMENT NEWS

S.No.	Roll No	Name	Company
1	1306840133	SAGAR VERMA	KATYAYNI
2	1306840181	VIPIN KUMAR YADAV	WIOSKA MOULDING
3	1306840856	VISHAL	WIOSKA MOULDING
4	1306840855	VINEET UPADHYAY	WIOSKA MOULDING
5	1306840013	AJAY GUPTA	AMAZON
6	1306840010	ADITYA KUMAR	AMAZON
7	1306840144	SHEKHAR SHARMA	DIN ENGINEERING SERVICES
8	1306840070	GAURAV SAINI	KATYAYNI
9	1306840057	DEEPA	WIOSKA MOULDING
10	1306840056	CHARU SINGH	KATYAYNI
11	1306840055	CHANDRA BHUSHAN GOUTAM	BYJUs
12	1306840115	PRASHANT YADAV	Q1-Tech
13	1306840114	PRASHANT SINGH	TCS
14	1306840113	PRAKASH PANDAY	BYJUs
15	1306840120	RAHUL RATHI	Q1-Tech
16	1406840905	DHANVEER SINGH	TCS
17	1306840068	DIVYA VERMA	BYJUs
18	1306840060	DEEPAK KUMAR	BYJUs
19	1306840051	AVINASH KUMAR	SPECTRUM TALENT MANAGEMENT (P) LTD
20	1306840036	ANUBHAV DAGAR	ROOP AUTOMOTIVES
21	1306840023	AMAR MISHRA	ROOP AUTOMOTIVES
22	1306840025	AMIT KUMAR	ROOP AUTOMOTIVES
23	1406840902	AKASH JINDAL	Q1-Tech
24	1306840847	UTKARSH SHARMA	PYRAMIDS MARINE & AVIATION MANAGEMENT
25	1306840820	KRISHNA SINGH	PYRAMIDS MARINE & AVIATION MANAGEMENT
26	1306840816	HIMANSHU TYAGI	PYRAMIDS MARINE & AVIATION MANAGEMENT
27	1306840110	NITISH SHARMA	PYRAMIDS MARINE & AVIATION MANAGEMENT
28	1306840107	NITIN ANAND	PYRAMIDS MARINE & AVIATION MANAGEMENT
29	1306840003	ABHINAV CHAUHAN	PYRAMIDS MARINE & AVIATION MANAGEMENT
30	1306840016	AKSHAY KUMAR	PYRAMIDS MARINE & AVIATION MANAGEMENT
31	1306840021	AMAN JAYSWAL	PYRAMIDS MARINE & AVIATION MANAGEMENT
32	1306840089	KARAN SINGHAL	PYRAMIDS MARINE & AVIATION MANAGEMENT