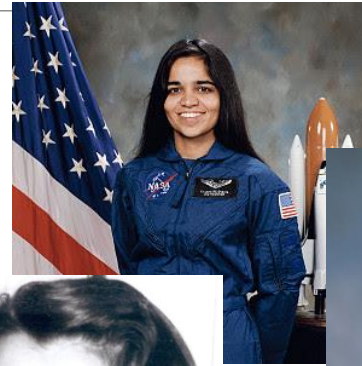


Inspirational Women Stories in STEM

Presenters

- Alekhya Dontham
- Noel Mathew
- Claudia Swinson
- Lauren Drankoff
- Melissa McCabe



Inspirational Women Stories

Kalpana Chawla: Wonder Woman of Space

Presenter Name: **Alekhya Dontham**

ENM 583 – Leadership & Engagement for Diversity in Engineering

Background

- She was born in Haryana, India in 1962.
- Her fascination for the space started when she was a child.
- She went to local flying clubs to watch planes with her father.
- She moved to America after her Under Graduation in Aerospace Engineering.

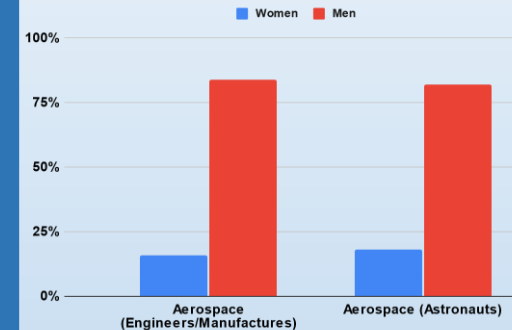
Career Path

She started working at NASA in 1988 as a researcher on CFD. She joined the NASA Astronaut Corps in 1995 and was selected for her first flight in 1996.

Interesting Facts

- She enjoyed poetry and painting and was very creative.
- First Indian-American astronaut and first Indian born woman in space.

Statistical Data on Women in Aerospace Engineering



Average Male Salary: \$112,114

-Avg. Female Salary: \$93,781

-Gender composition

Male:113K

Female:20.3K

Notable Contributions

- Her enigmatic legacy paved the way for Indian women in science.
- She served as a mission specialist on STS-107. The crew completed over 80 experiments on a 16day flight.
- A series of meteorological satellites were named after her.
- She was the first Indian woman to go to space.
- A lot of her research on CFD is included in technical journals and conference papers.

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INSPIRATIONAL WOMEN STORIES: ROSALIND FRANKLIN

Background

- Born on 25th July, 1920 in Notting Hill, London, UK.
- Passed matriculation with 6 distinctions and joined Newnham College, University of Cambridge.
- Received research fellowship & joined the physical chemistry laboratory of the University of Cambridge.

Notable Works

- Was redirected to study on DNA from proteins and lipids.
- Franklin and Gosling discovered the two types of DNA: DNA A which was dry and DNA B which was wet.
- They took the infamous Photograph 51 which took 100 hours of X-Ray exposure which Franklin herself had refined.
- Used X-ray crystallography to study the structure of the tobacco mosaic virus (TMV), an RNA virus.

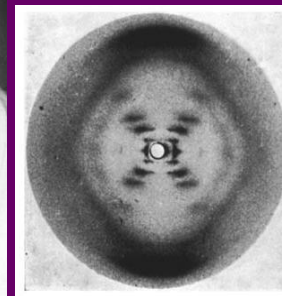
Career Path

- Became part of the Laboratoire Central des Services Chimiques de l'État in Paris.
- Turner & Newall Fellowship at King's College London awardee
- Joined Birkbeck College

Interesting Facts

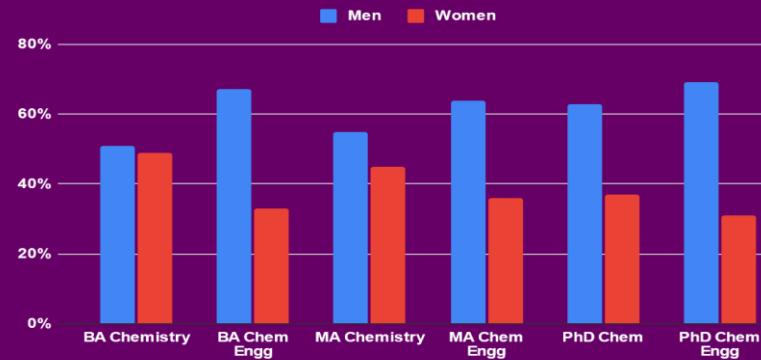
- Asteroid '9241 Rosfranklin' is named after her.
- Photograph 51, an award winning play, is based on her life
- Never received her Nobel prize posthumously.

- Worked on a live sample of the polio virus rather than dead.
- Discovered the shape of the polio virus as crystalline.

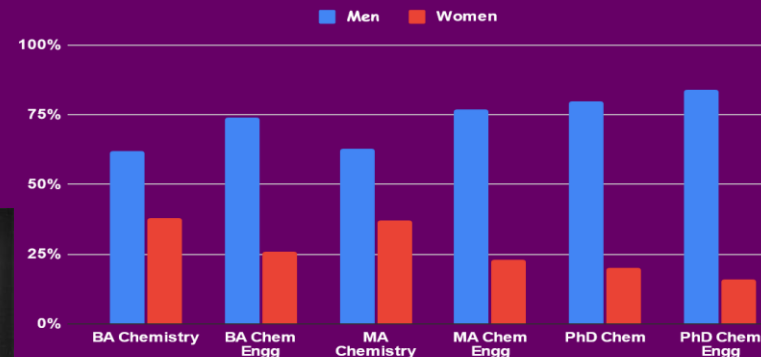


Statistical Data On Women in Chemical Engineering

Degrees Earned in Chemistry & Chem Engg



Employed Chemists and Engineers



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Inspirational Women Stories

Presenter Name: Claudia Swinson

ENM 583 – Leadership & Engagement for Diversity in Engineering



Cynthia Breazeal

Background

- Received B.S. in Electrical and Computer Engineering from University of California in 1989 [1].
- Completed graduate work at MIT's Artificial Intelligence Lab [1].
- Received her M.S. and Sc.D. in Electrical Engineering and Computer Science from MIT in 1993 [1].

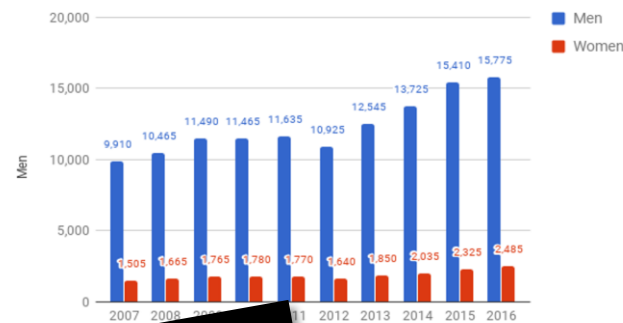
Statistical Data on Women in Computer Science

- Women only earn **18%** of computer science bachelor's degrees in the US per year [4].
- "Only **20%** of computer science professionals are women" [4].
- In secondary schooling, there is less emphasis on computer science for women than men [4]

Interesting Facts

- Recipient of National Academy of Engineering's Gilbreth Lecture Award and an ONR Young Investigator Award.
- TIME magazine's Best Inventions of 2008.
- Finalist in the National Design Awards in Communication.
- Fortune Magazine's Most Promising Women Entrepreneurs.

Applicants for computer science degree courses, by gender



Career Path

- Associate Professor of Media Arts and Sciences at MIT
 - Founded and directs the **Personal Robots Group at the Media Lab.**
 - Pioneer of Social Robotics and Human Robot Interaction [1]. Maddox, Tega, and Jibo are examples.
- Associate Director for the Bridge: MIT Quest for bringing in AI to K-12 vocational education [1].
- Research on developing technology for robots that are socially intelligent, interact, work and communicate with people, "living with the AI" [1].
- Studies the impact of social robots helping people achieve goals [1]
 - Physical performance, education, health, communication.
- Jibo, Inc. gives users social robot experience – world's first family robot [1].

Notable Contributions

- Wrote *Designing Sociable Robots*.
- Published over 100 peer-reviewed articles on Autonomous Robots, Artificial Intelligence, Human Robot Interaction, and Robot Learning[1].
- Developed famous robotics – small hexapod robots, embedding robotic technology into common artifacts, and expressive humanoid robots [1].



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Inspirational Women Stories:

Mae Jemison

Lauren Drankoff

ENM 583 – Leadership & Engagement for Diversity in Engineering

Background

- Mae Jemison was born in 1956.
- She graduated from Standard University with a chemical engineering degree.
- She went on to receive a medical degree from Cornell University.
- Jemison became a doctor, an astronaut, and a consultant.

Career Path

- She worked for the peace corps in Liberia as a general practitioner.
- Jemison then worked for NASA for six years.
- After NASA, she established a technology research company called The Jemison Group.

Interesting Facts

- She became the first black woman astronaut in 1987.
- After she graduated college, she almost became a professional dancer.

Notable Contributions

- Jemison was chosen as one of the fifteen people in the NASA Astronaut Group 12.
- This was the first group following the Challenger disaster.
- She became the first black woman astronaut in 1987.
- At NASA, Jemison flew on the STS-47 space mission in 1992 where she logged 190 hours of flight time as shown in Figure 1.
- Aboard the spacelab, she tested the fluid therapy system designed to produce water for injection.
- This solution was then added to an IV bag to produce a saline solution in space.



Figure 1. Mae Jemison in 1992 preparing for the STS-47 Mission.

Statistical Data on Women Astronauts

- Figure 2 shows there have been 65 female and 501 male astronauts at NASA.
- Of the 65 females, there have been 6 African American female astronauts.
- Of the 501 male astronauts, there have been 12 African American male astronauts.
- The first woman astronaut, Sally Ride, flew on the STS-7 in 1983.
- The most women to ever be in space at one time was 4 in 2010 during the space shuttle Discovery STS-131 mission.

Male and Female Astronauts

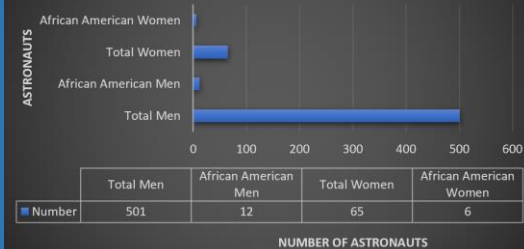


Figure 2. Male and Female Astronauts

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INSPIRATIONAL WOMEN STORIES: HEDY LAMARR

(1914 – 2000)

MELISSA MCCABE

ENM 583 – LEADERSHIP & ENGAGEMENT FOR DIVERSITY IN ENGINEERING



BACKGROUND

- Born Hedwig Eva Kiesler on November 9th, 1914 in Vienna, Austria
- Father inspired her scientific curiosity; mother introduced her to the arts
- Known as “the most beautiful woman in the world”
 - “My beauty is my curse”

CAREER PATH

- Discovered at the age of 16 & began acting
- 1932 – first major film role, *Ecstasy*
- 1937 – signed with MGM Studios, began working in Hollywood
- 1942 – awarded patent for frequency hopping technology
- 1949 - most commercially successful film, *Samson & Delilah*
- 1958 – retired from movies
- 1997 – received Pioneer Award from Electronic Frontier Foundation
- First woman to receive Invention Convention’s Bulbie Gness Spirit of Achievement Award
- 2014 – inducted into National Inventors Hall of Fame

INTERESTING FACTS

- Her looks were the inspiration for Disney’s Snow White & Catwoman in the original *Batman* comics
- Her first film, *Ecstasy*, was banned by the Pope & Hitler – very controversial

***“ANY GIRL CAN BE GLAMOROUS.
ALL YOU HAVE TO DO IS STAND STILL AND LOOK STUPID.”***

NOTABLE CONTRIBUTIONS

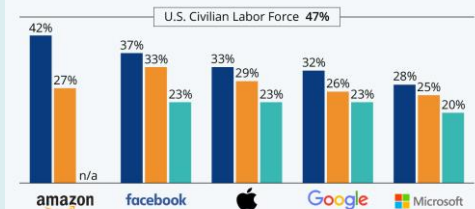
- During World War II, co-invented frequency hopping technology with composer George Antheil
 - Secret communication system, prevented hacking/decoding
 - Multiple radio frequencies used to broadcast a radio signal, changed frequencies quickly & seemingly randomly
 - Signal would be clear if both transmitter & receiver hopped frequencies at same time
- Navy decided not to implement new system during WWII
- Patent expired before earning any money from it
- Would become the basis for today’s Wi-Fi, GPS & Bluetooth technologies

STATISTICAL DATA ON WOMEN IN TECHNOLOGY

GAFAM: Women Still Underrepresented in Tech

Percentage of female employees in the workforce of major tech companies*

■ Total Workforce ■ Leadership Jobs ■ Tech Jobs



* latest available data as of Feb. 19, 2020

Source: Company reports



statista

2 out of 5 women of color doubt their opportunities for growth in the tech industry



whereas only **1 in 3 white women** has this concern



Source: Statista/2020 Women in Tech Report

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