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Danni, Lorna, Jordan & Sarah

Fusion Energy: Using Star Power on Earth.

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Who are we? What do we do?

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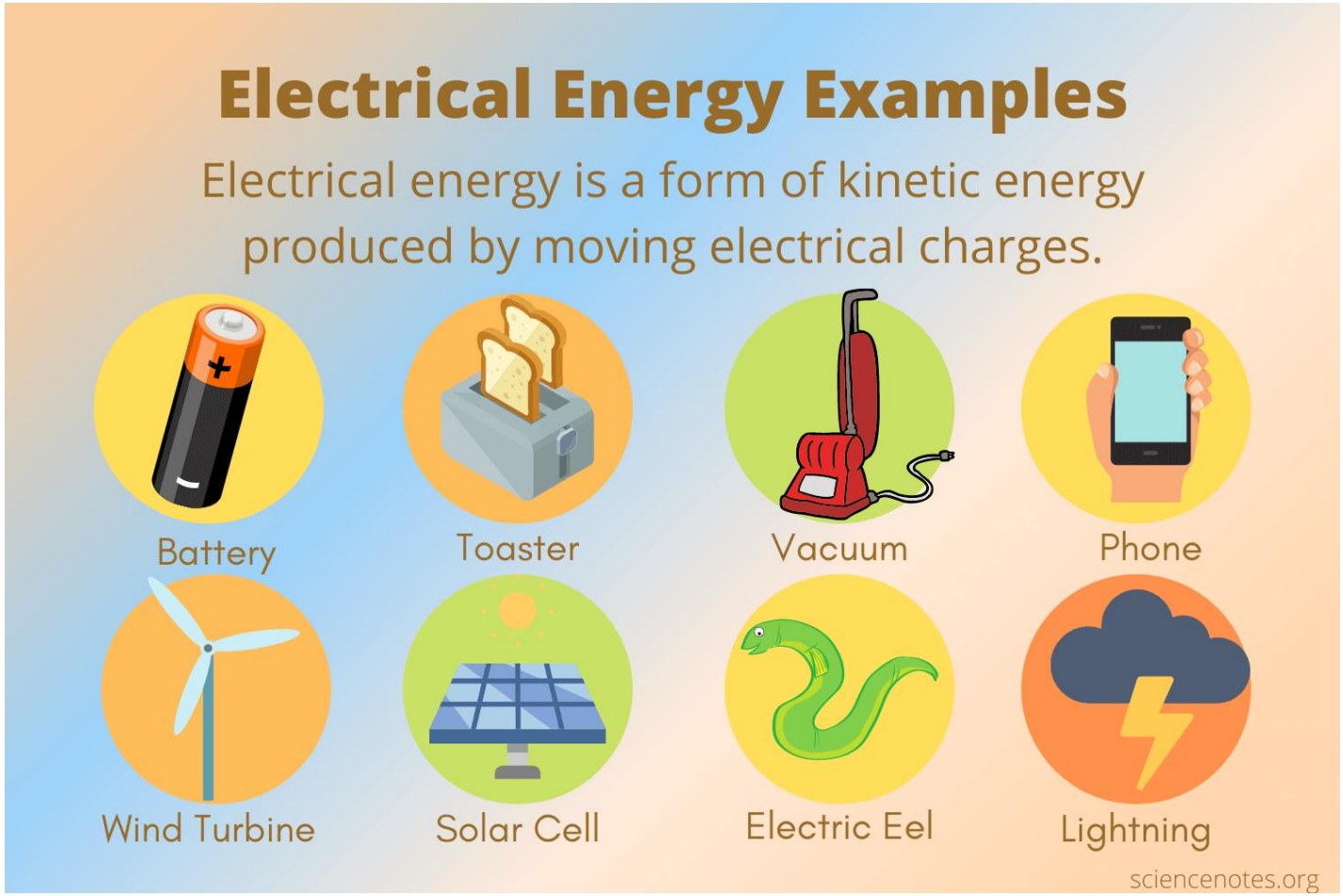
- Danni – Project Manager (Makes sure people have the equipment they need to do their jobs)
- Lorna – Simulation engineer (uses computers to test materials in simulations)
- Jordan – Outreach officer (Shares the exciting fusion knowledge with children and the public)

- UKAEA – UK Atomic Energy Authority (We use atoms to create Fusion Energy)

Types of Energy

- Heat Energy
- Sound Energy
- Light Energy
- Electrical Energy
- Fusion Energy



Engineer or Scientist?

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Engineer or Scientist?

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Everything is made of atoms...

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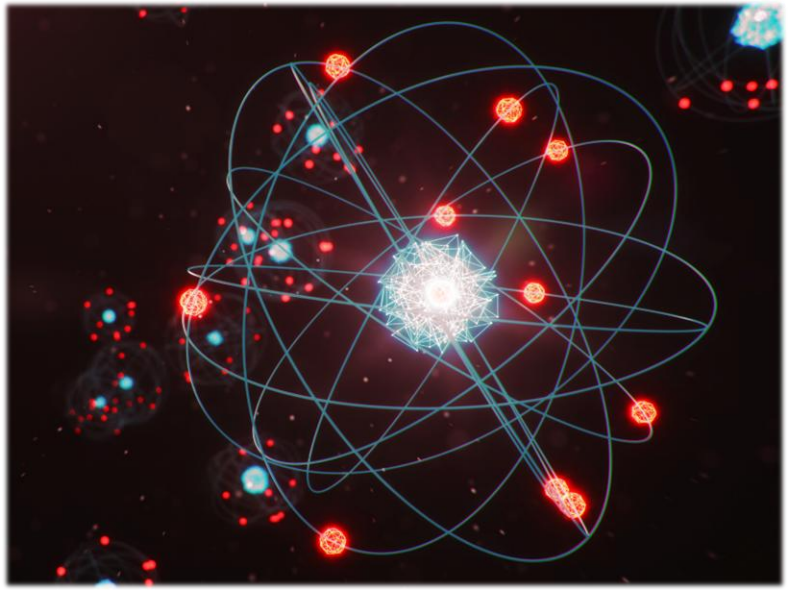


... even you!

States of Matter

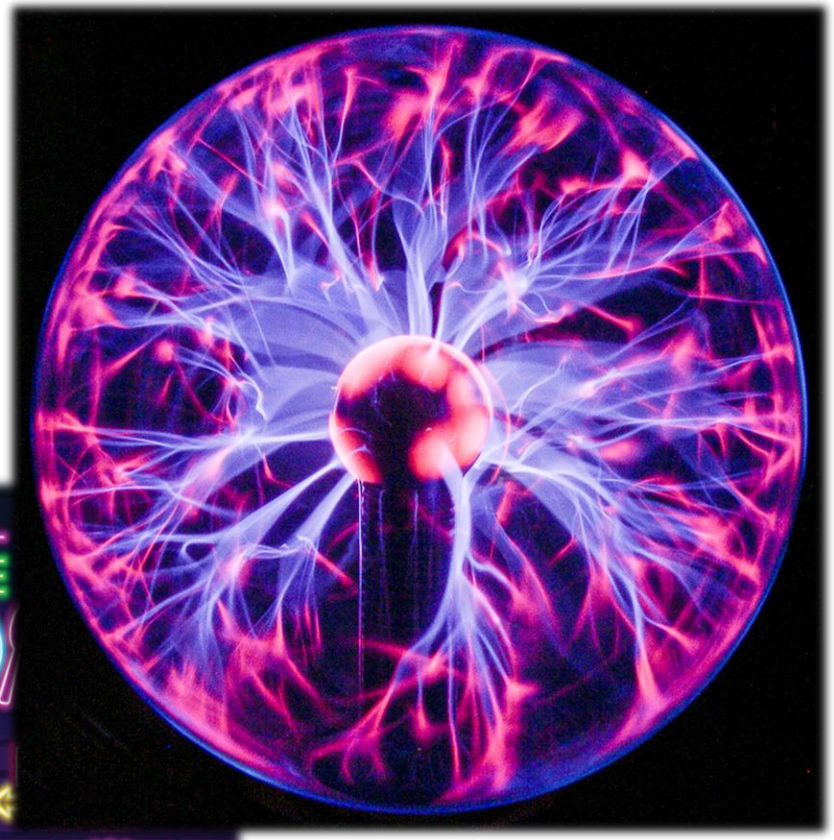
Solids

Liquids

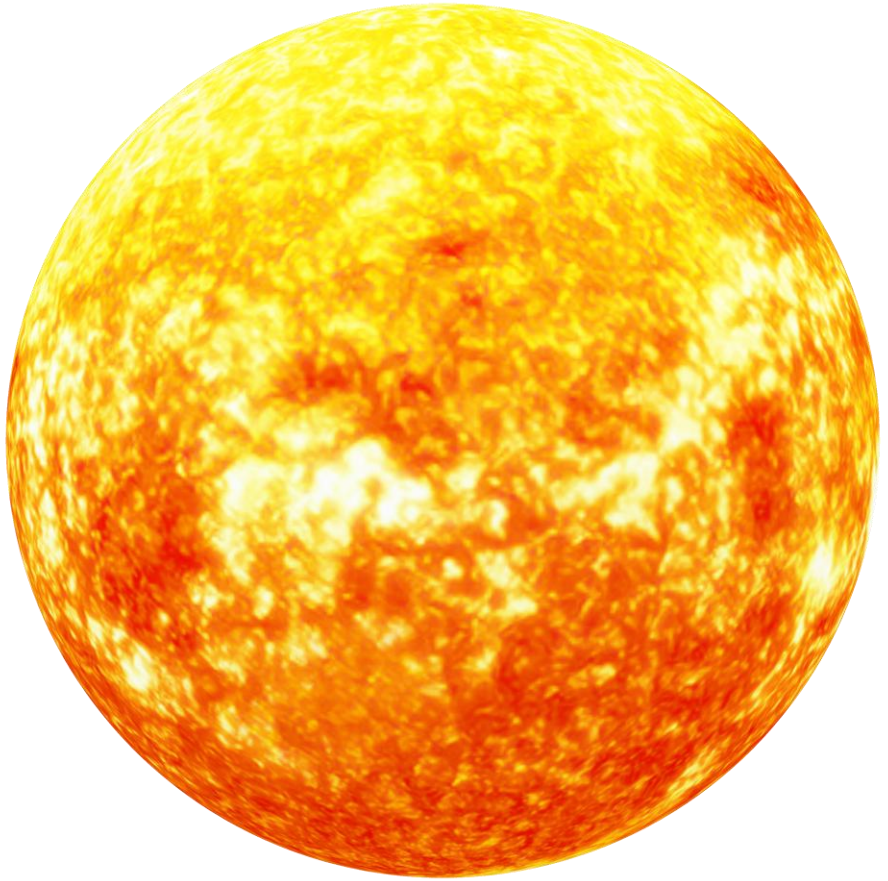
Gas

Plasma!


MOTEL
MUSIC BAR
POKER CLUB
PIZZA TIME
777
CASINO
24H CAFE
24/7
THE CRAFT BEER
CINEMA
CHINESE FOOD
FOOD
OPEN



What's so special about stars?



What's so special about stars?

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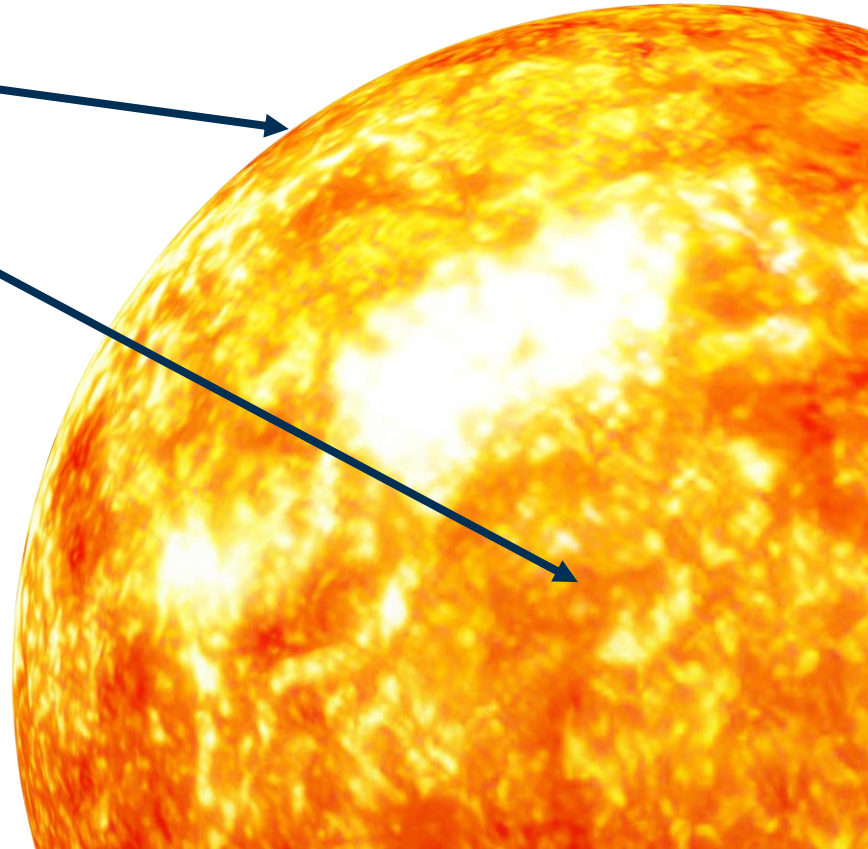
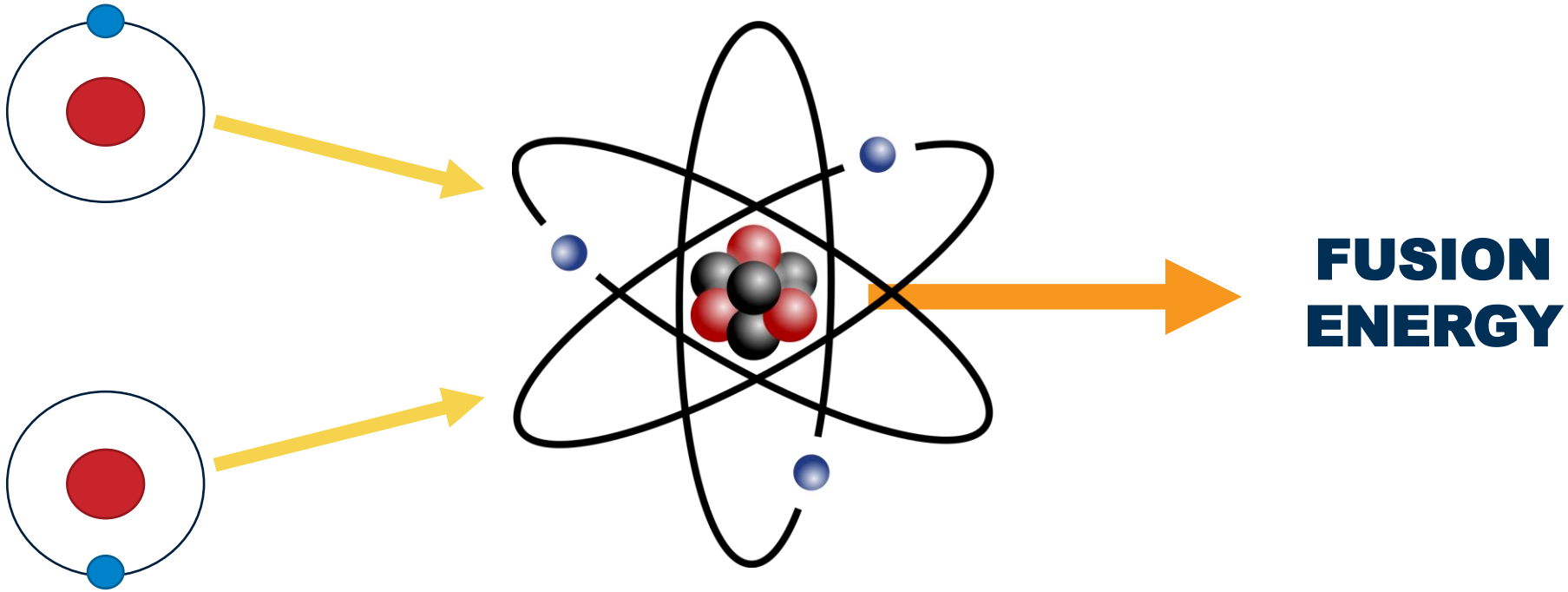
- Stars are natural fusion machines!

- **High Temperature**
  - The suns surface temperature is 5000°C

  - The suns core temperature is 15,000,000°C



Inside stars, atoms combine to create Fusion Energy



Fusion Energy - From the Sun to Earth

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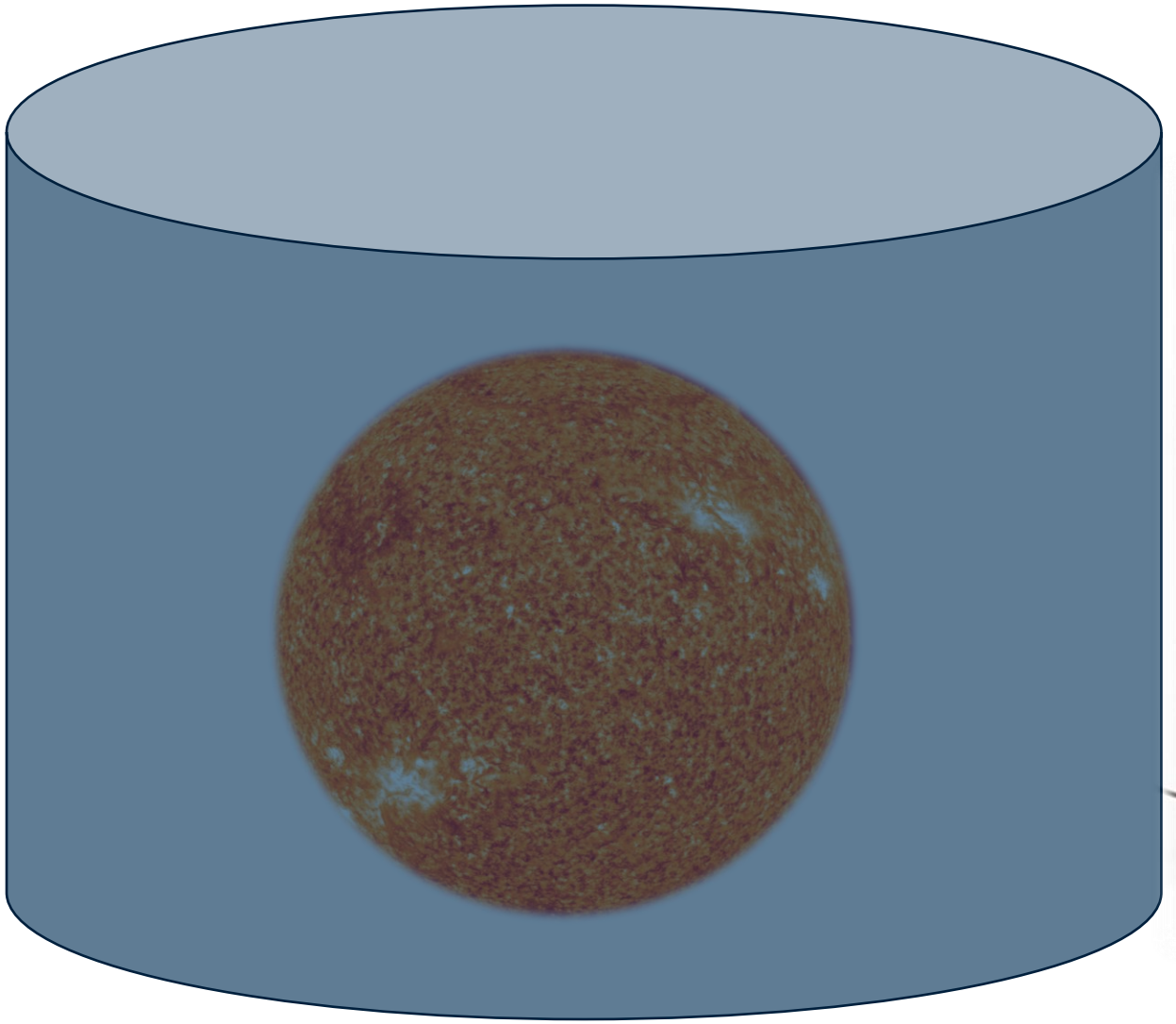
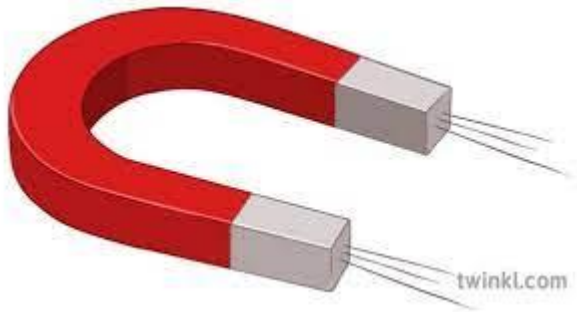
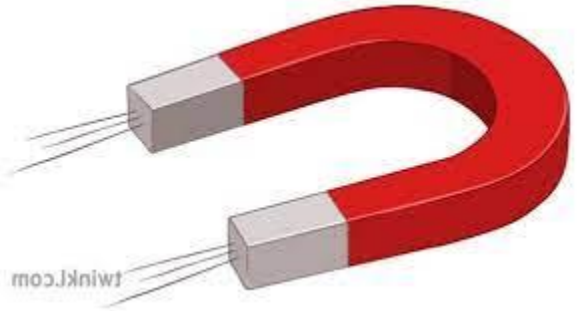
Fusion On Earth:
Making a ‘Star in a jar’



Fusion on Earth: a doughnut-shaped machine, controlled with magnets





Fusion on Earth: The ‘Tokamak’

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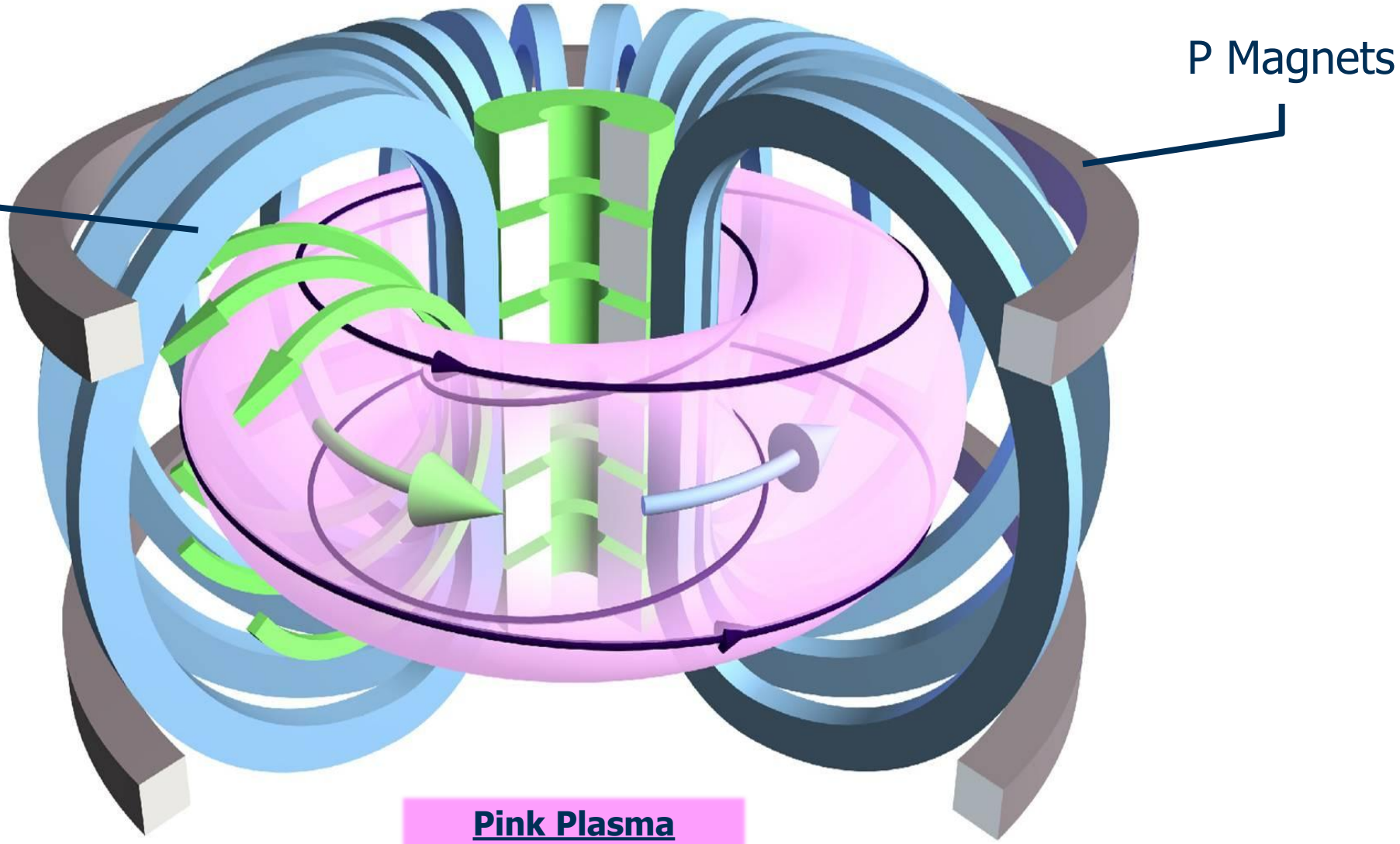
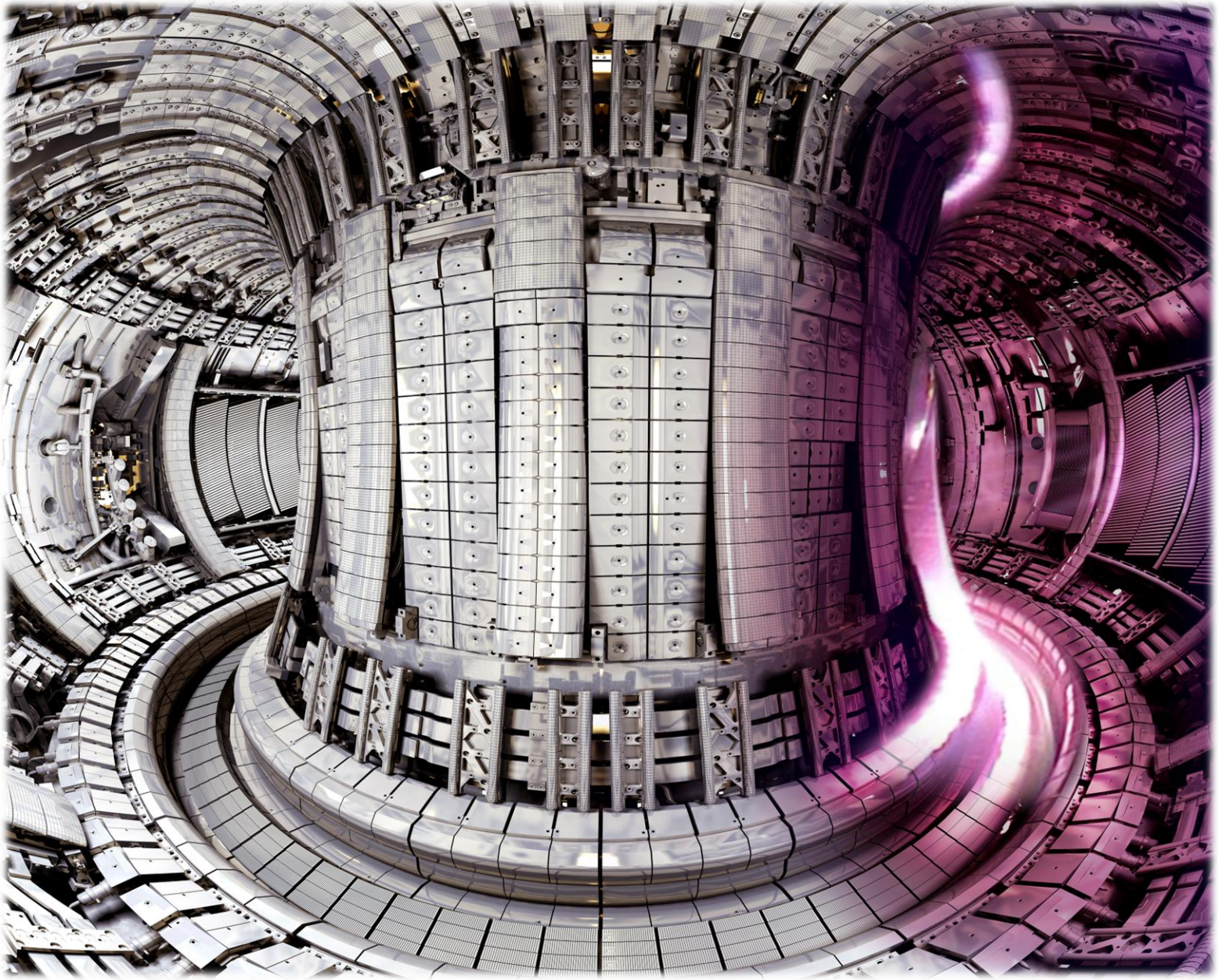


Pink Plasma
(the doughnut ring)

The Tokamak



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What is a Fusion Engineer?

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- All engineers are problem solvers
- Lots of different engineers are needed for Fusion!

- Robotic engineers – Can we use robots to build and fix machines?
- Chemical engineers – What chemicals are inside fusion plasma?
- Design engineers – What will large fusion machines look like?
- Mechanical engineers – How to build fusion machines?
- **Material Engineers – What can we make fusion machines out of?**

Materials testing workshop

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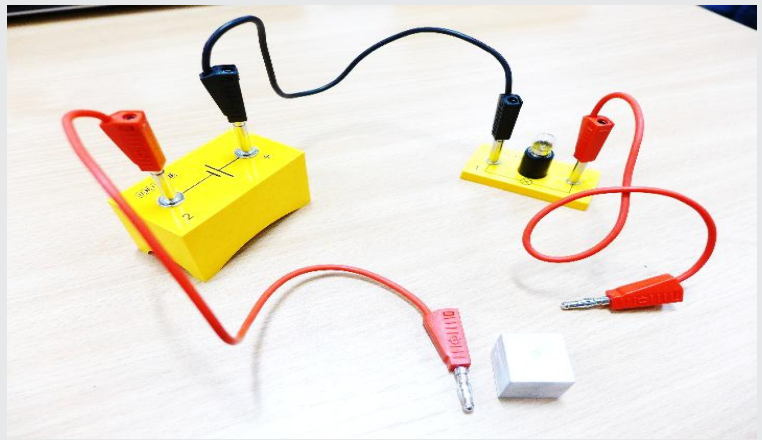
Test 1: Electricity	Test 2: Magnetism	Test 3: Density
A material is electrically conductive if electricity can pass through it. You can test for electrical conductivity by building the circuit shown in the photo. Test the materials and fill in the table with either yes or no.	Use the red and blue bar magnet to test to if the material is magnetic. Fill in the table with your results.	Weigh the materials using the weighing scales. Write your results (in grams) in the table.
		

What did you learn?

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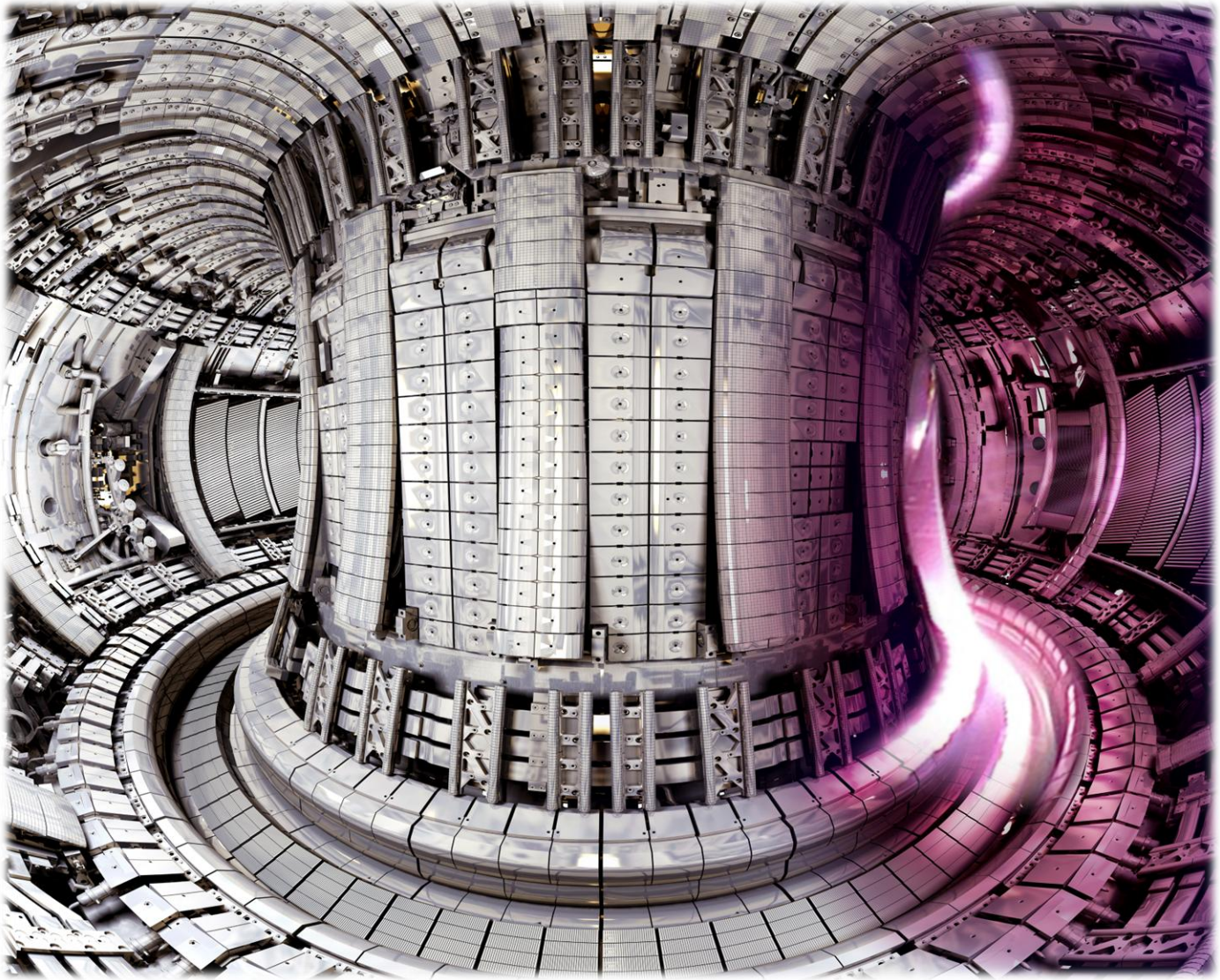
- Discuss your results

- What did you find interesting?

- Did you discover anything you didn’t expect?

- Which material would be best to use inside fusion machines?

What I like about the job
… The Tokamak!



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What I like about the job
… It's environmentally friendly!

What I like about the job ... Solving hard problems

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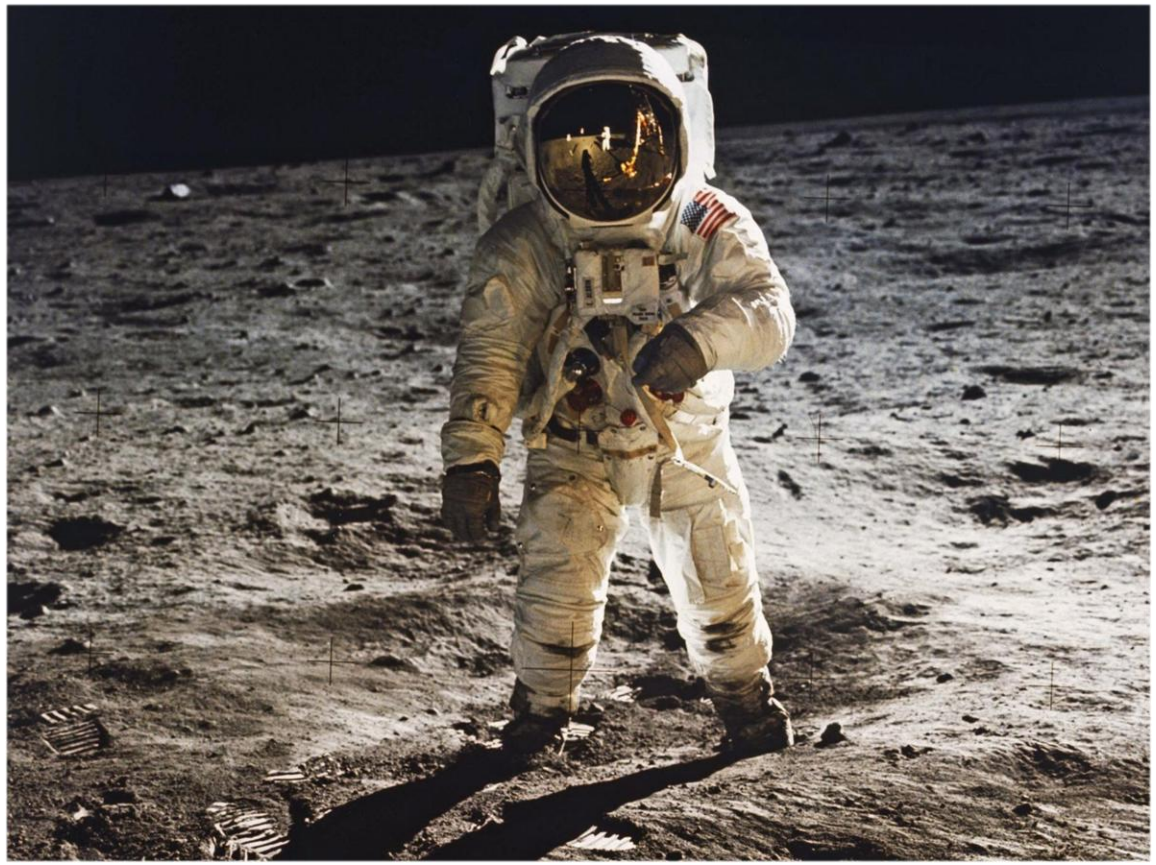
"We chose to go to the moon, not because it is easy, but because it's hard."



What I like about the job
… Working in a team

Any Questions?

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To learn more about Fusion, science and engineering…

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