

SNS COLLEGE OF TECHNOLOGY

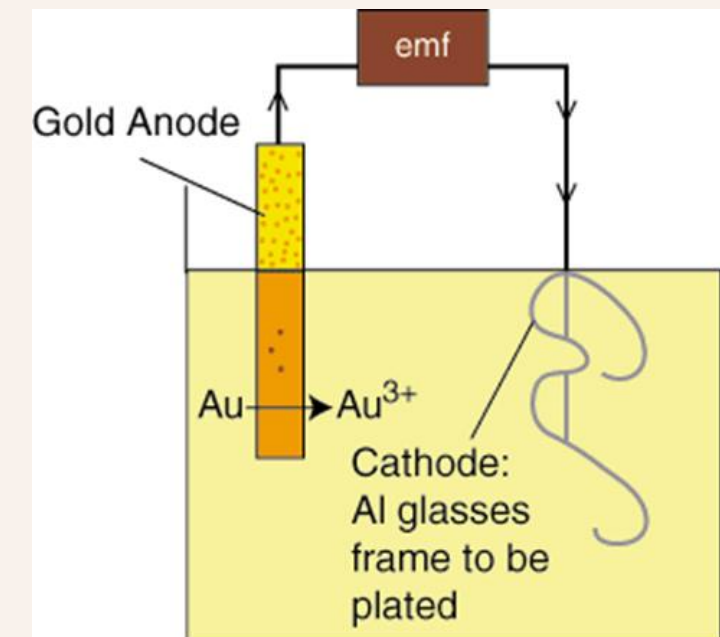
AN AUTONOMOUS INSTITUTION

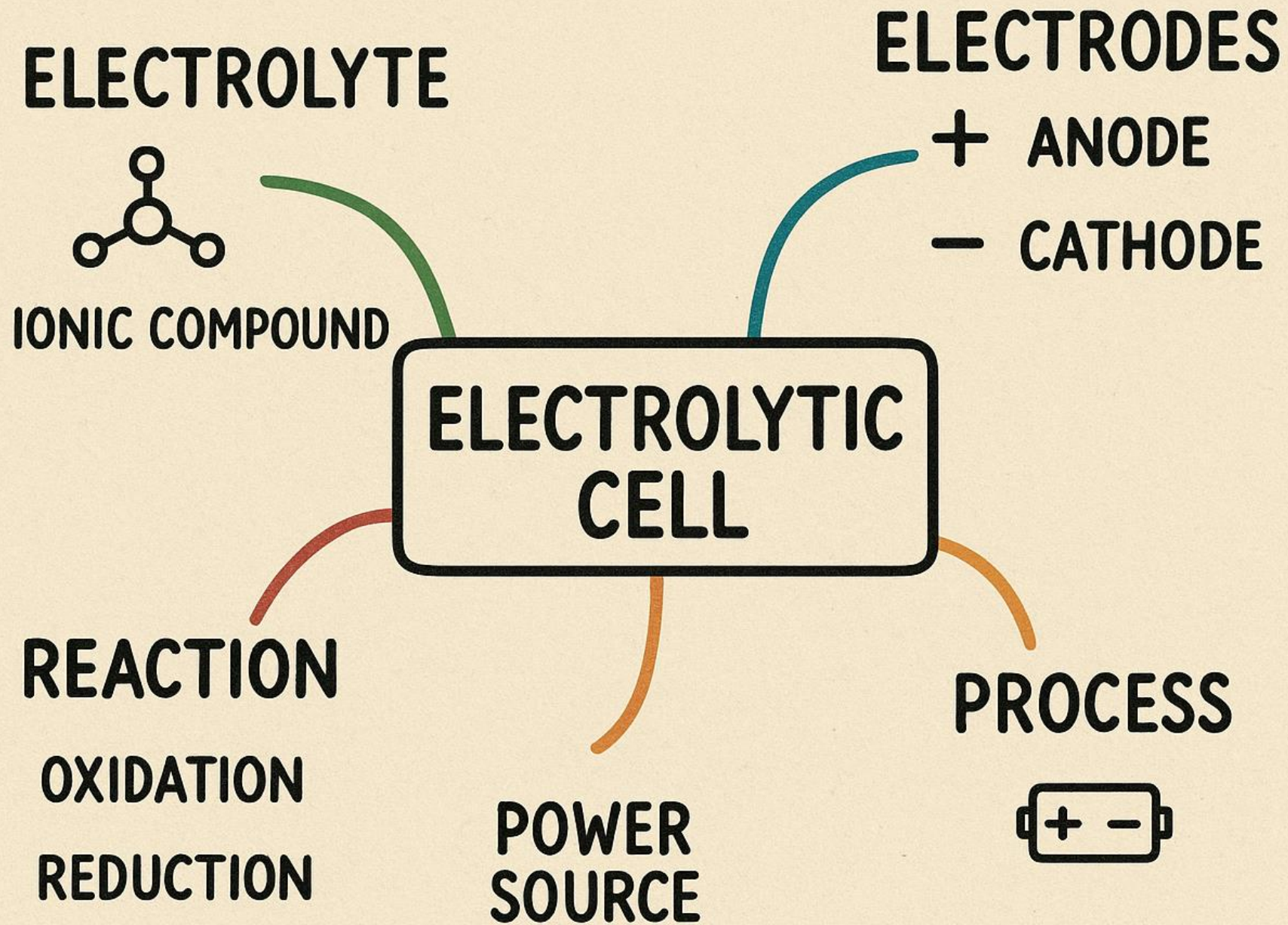
Coimbatore – 641035

23CHT101-ENGINEERING CHEMISTRY

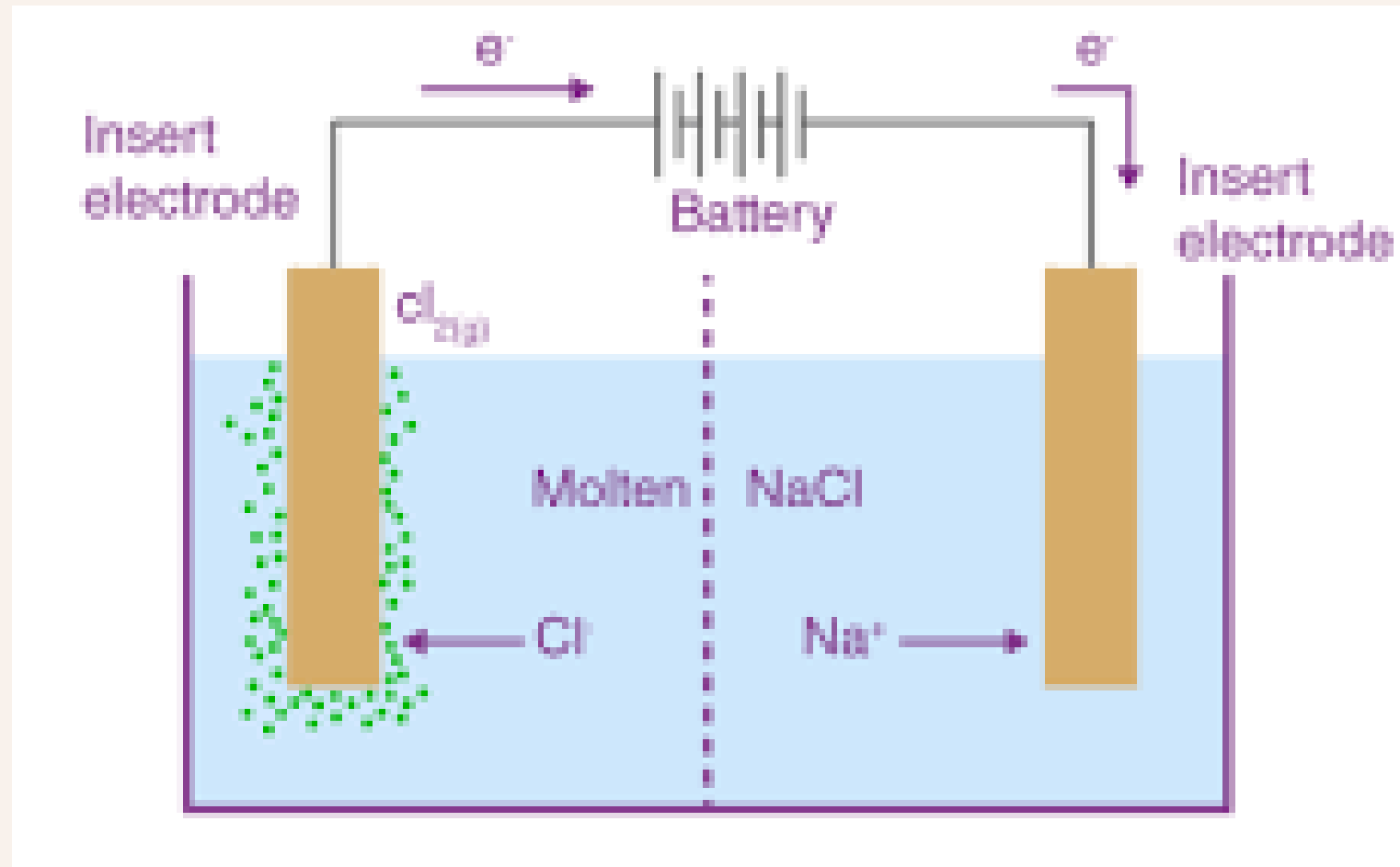
UNIT I - ELECTROCHEMISTRY

1.9. ELECTROLYTIC CELL AND ELECTROPLATING OF GOLD

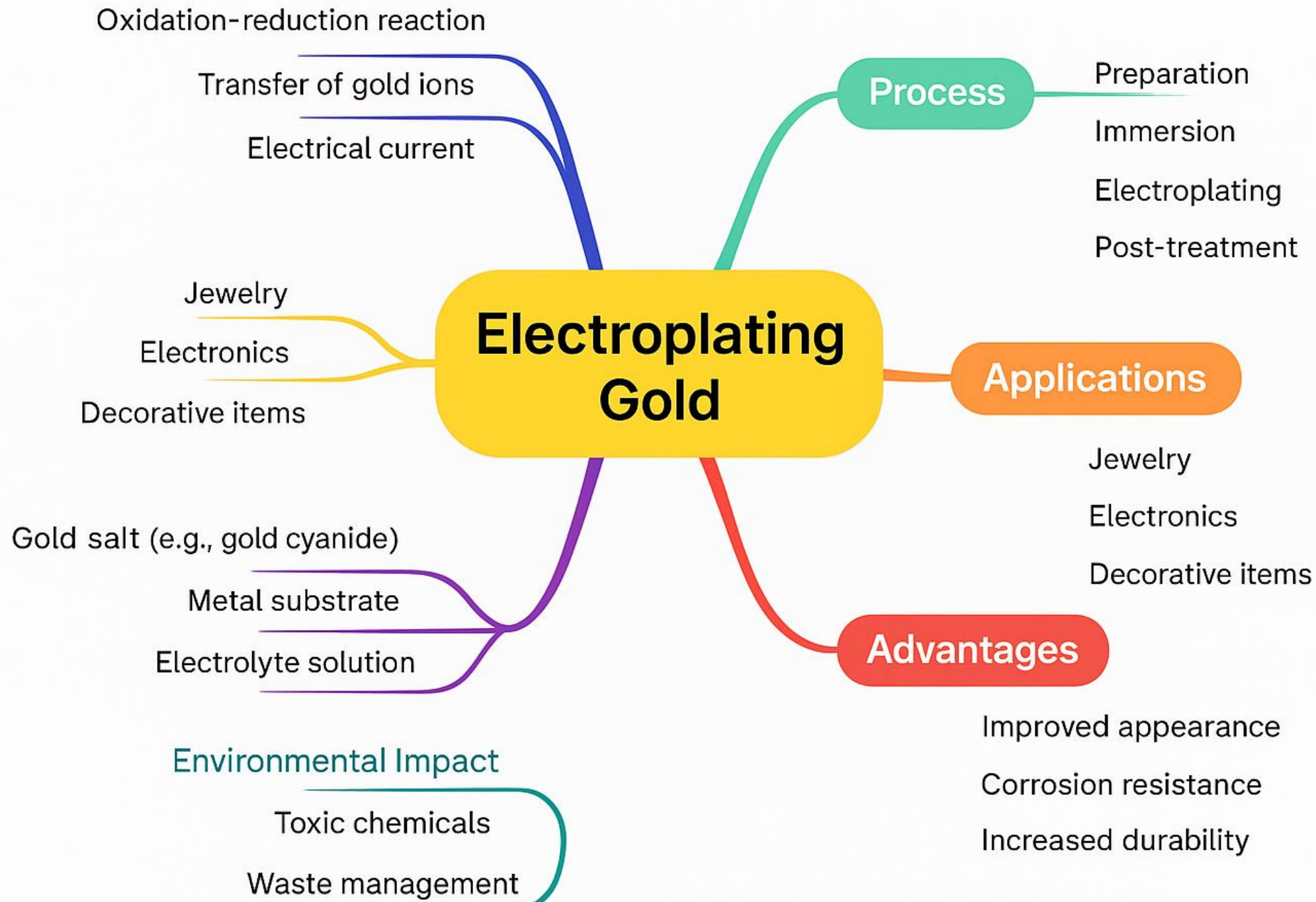




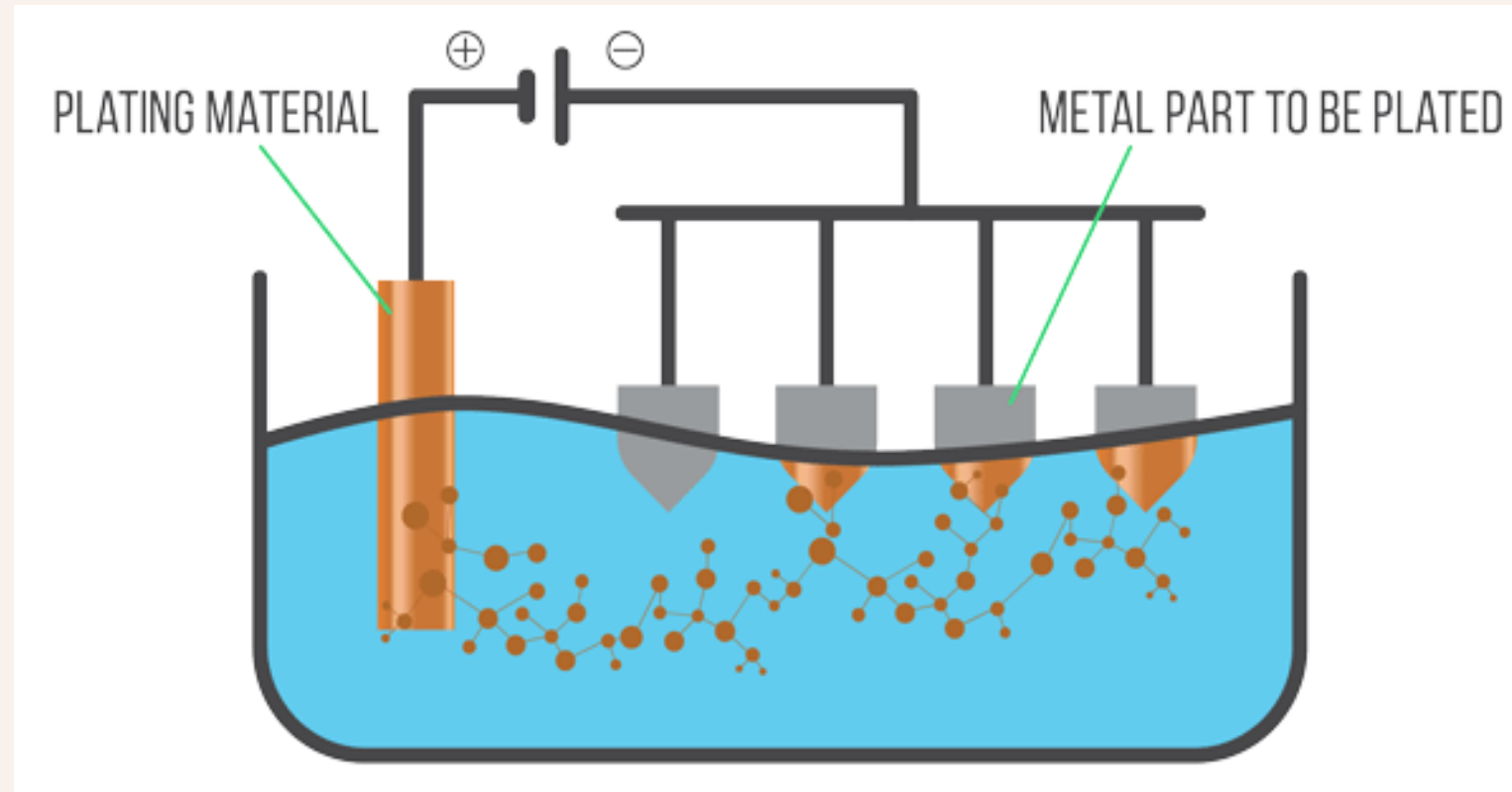
Electrolytic cell - Electrolysis



Electroplating of Gold



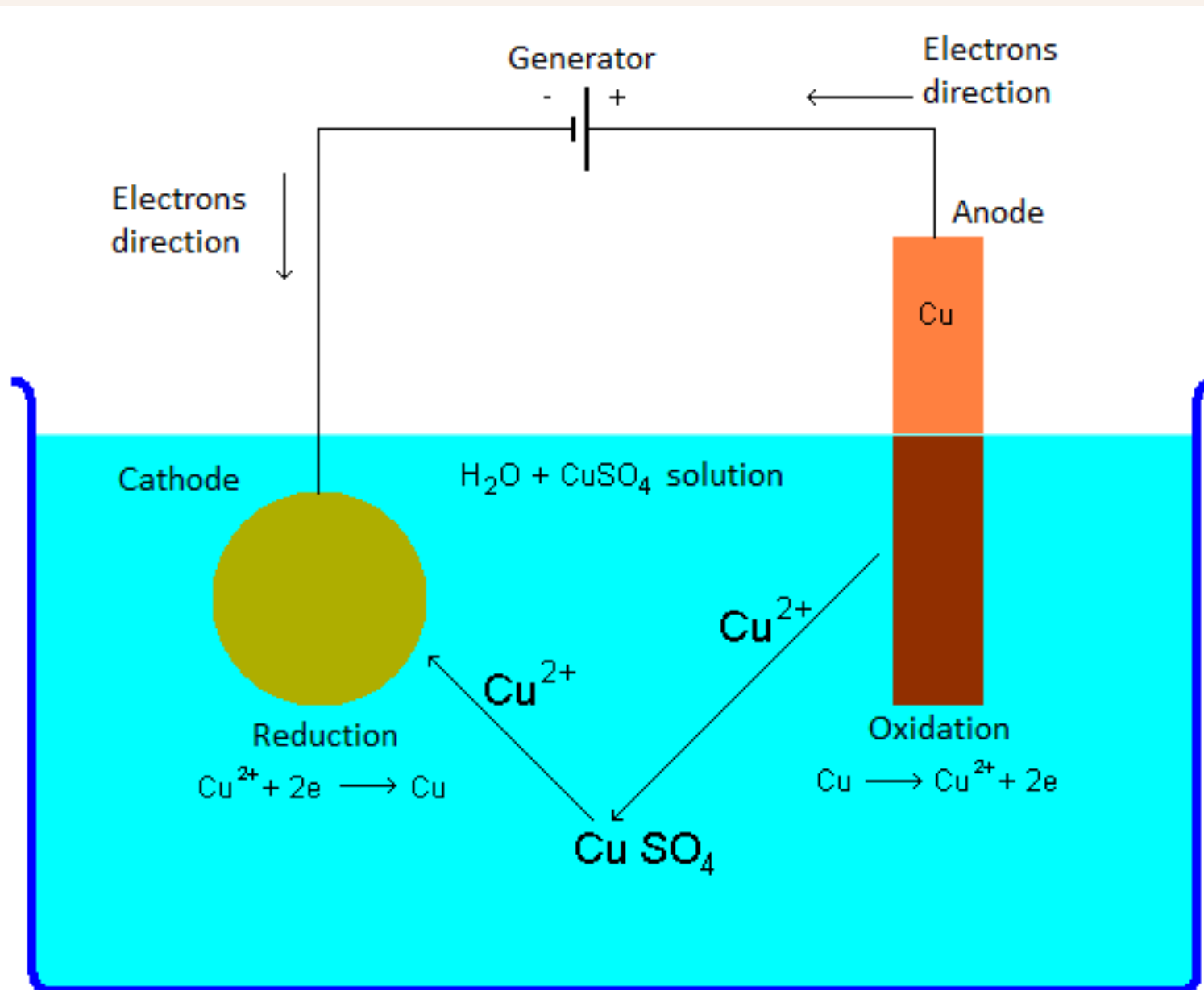
Introduction to Electroplating



Empathize

- Need to protect metals from corrosion.
- Improve appearance (shine, finish).
- Reduce cost (e.g., Copper, gold-plated instead of solid gold).

Principles of Gold Electroplating



Define


How to make base metals durable, attractive, and economical?



Equipment and Setup for Electroplating



1. Step One: Pretreatment
Removes oils & dirt, prepares surface.



2. Step Two: Activation
Eliminates oxide layer, exposes pure metal



5. Step One: Postprocessing
Thorough cleaning, & final inspection.

2. Step Three: Plating



4. Step Four: Postprocessing
Thorough cleaning, drying & final inspection. Product Complete!

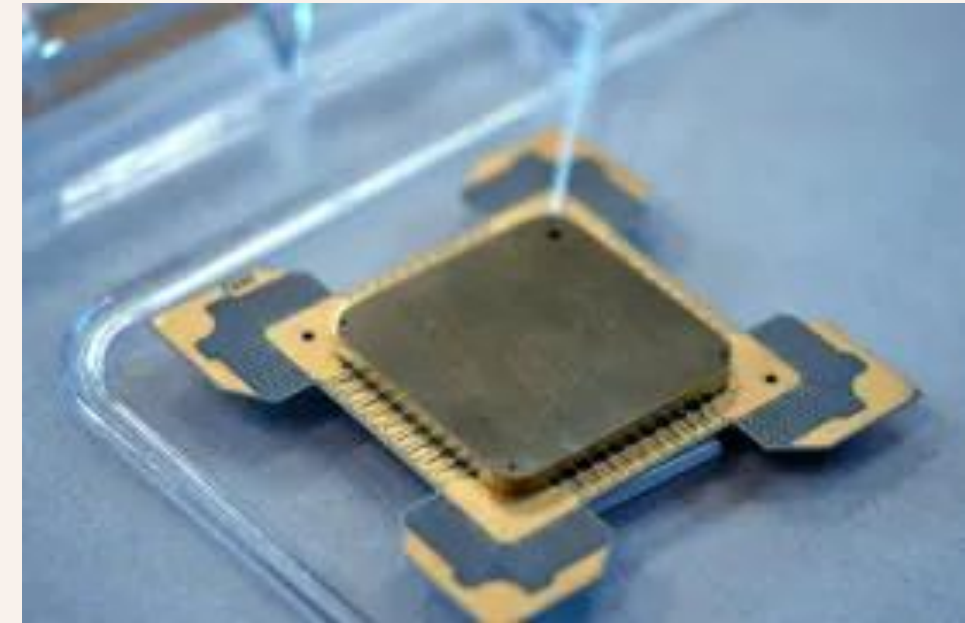
Equipment and Setup for Electroplating



Prototype

https://www.youtube.com/watch?v=G1Ymu2L3Y_M

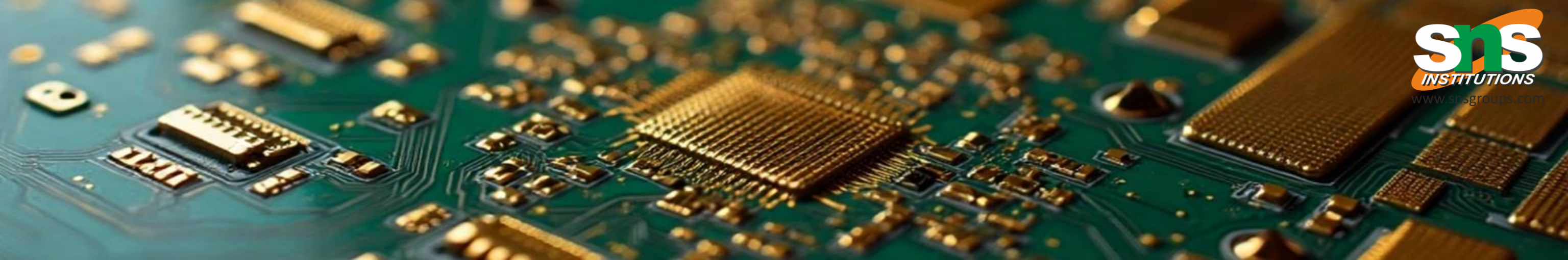
Advantages of Gold Electroplating



Challenges and Limitations

- 1 **Thickness Control**
- 2 **Adhesion Issues**
- 3 **Environmental Concerns**

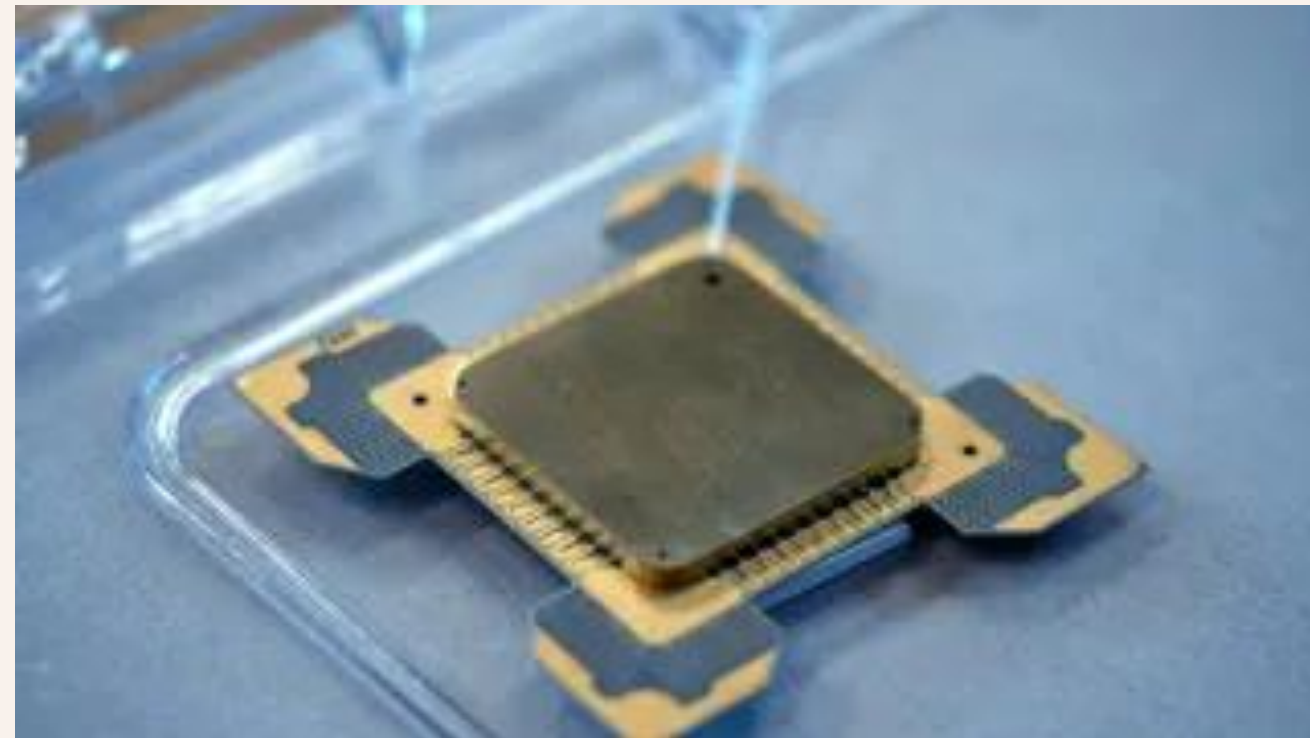




Applications in Electronics



Gold Finger PCB



Future Trends in Gold Electroplating

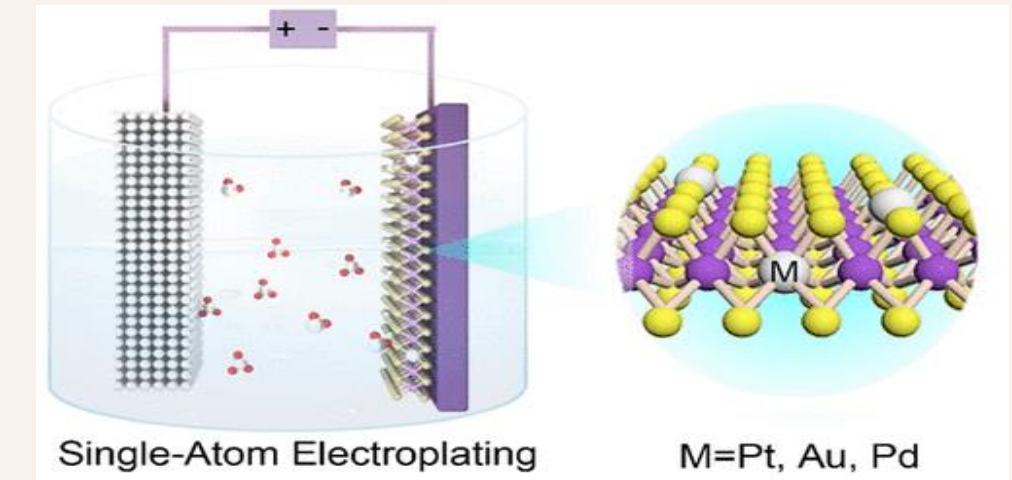
Green Chemistry

Eco-friendly electrolytes and processes to minimize environmental impact in gold plating.



Nanotechnology

Nanotechnology advances could improve electroplating control and gold layer properties.

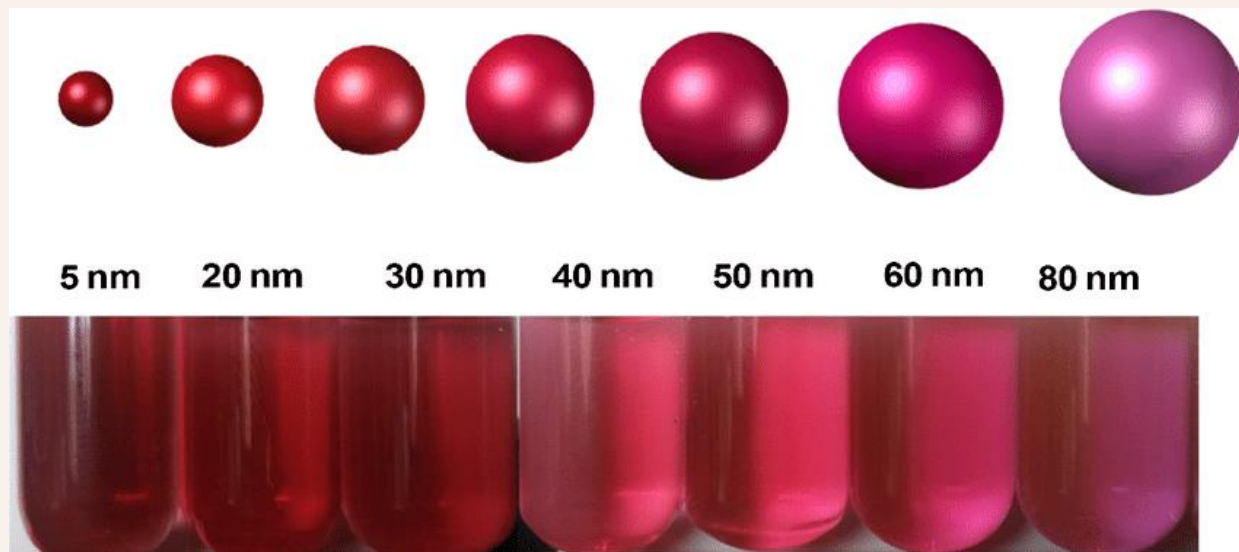


Automation

Automating plating processes boosts consistency, efficiency, and cuts labor costs.



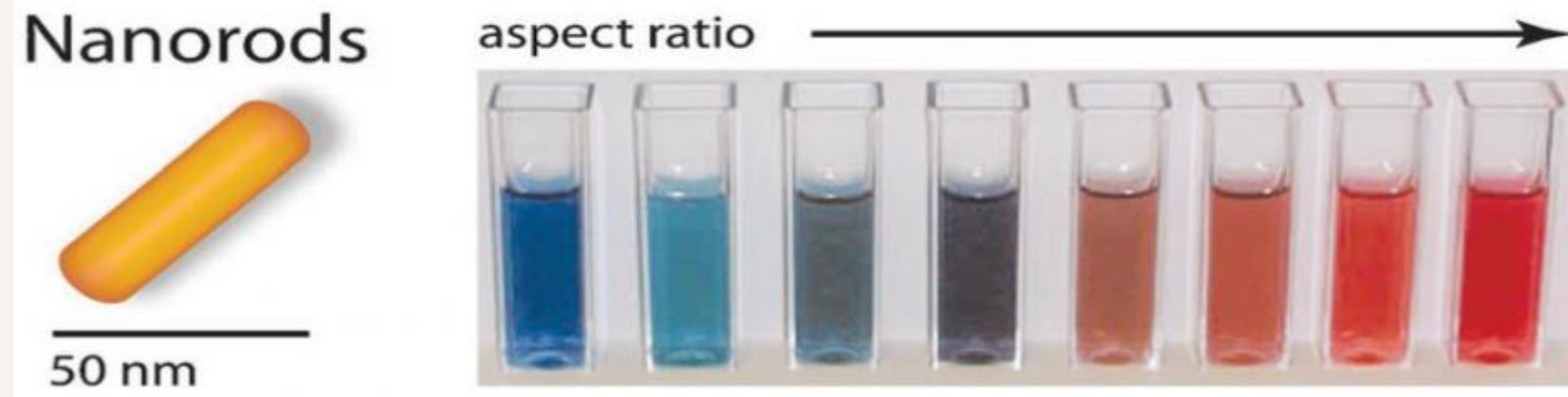
Gold Particles Vs Color



Quick Wrap-Up: What Did We Learn?

- What surprised you about gold electroplating?
- Can gold be used in eco-friendly ways?
- Do you think gold will still be important in the future?

Junk to Treasure – Teams find 3 items in the room they'd "recycle" gold from



References

<https://www.sharrettsplating.com/blog/how-gold-electroplating-is-done/>

<https://www.ganoksin.com/article/electroplating-jewellery/>

<https://www.thermofisher.com/blog/metals/how-gold-plating-is-done-step-by-step/>