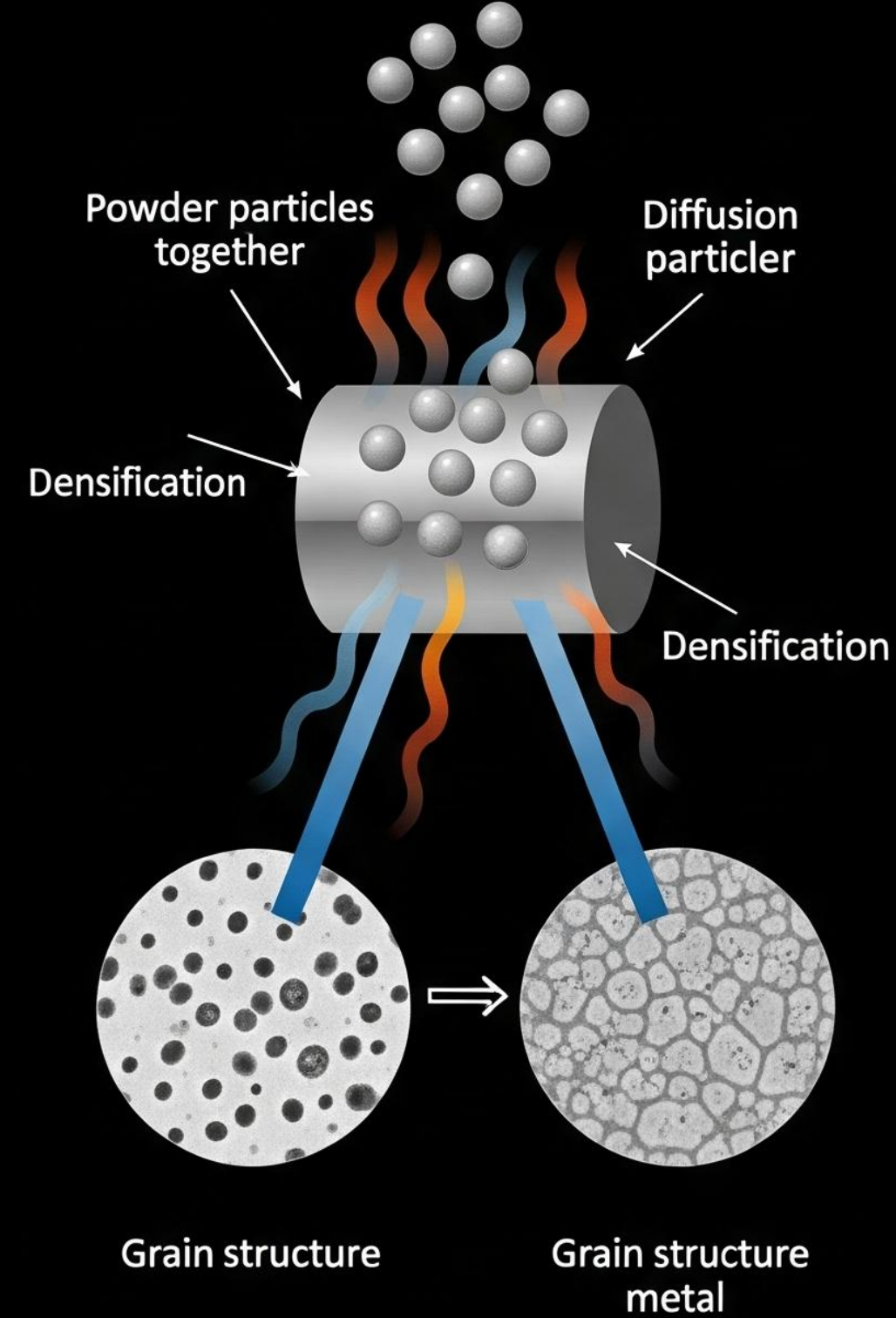


Advance materials **Platinum**

by Pablo Perelmuter



Sintering

Glossary

78

Pt
Platinum
195.08

Periodic table
element

**PRECIOUS
METAL ISO 4217**

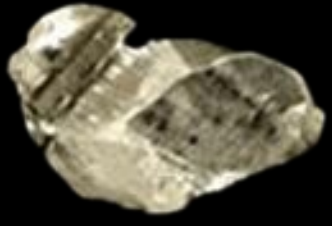
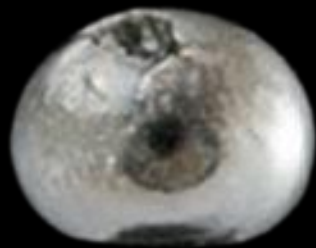
**Noble
Metal**



Industrial
Discovery



History
of Pt



Presentation
Overview

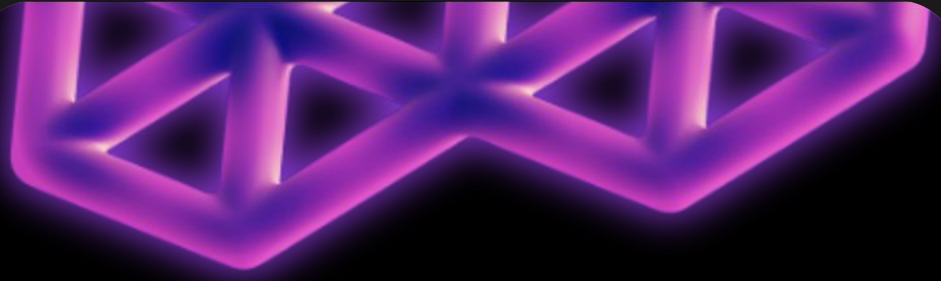
Market
trends



Labels



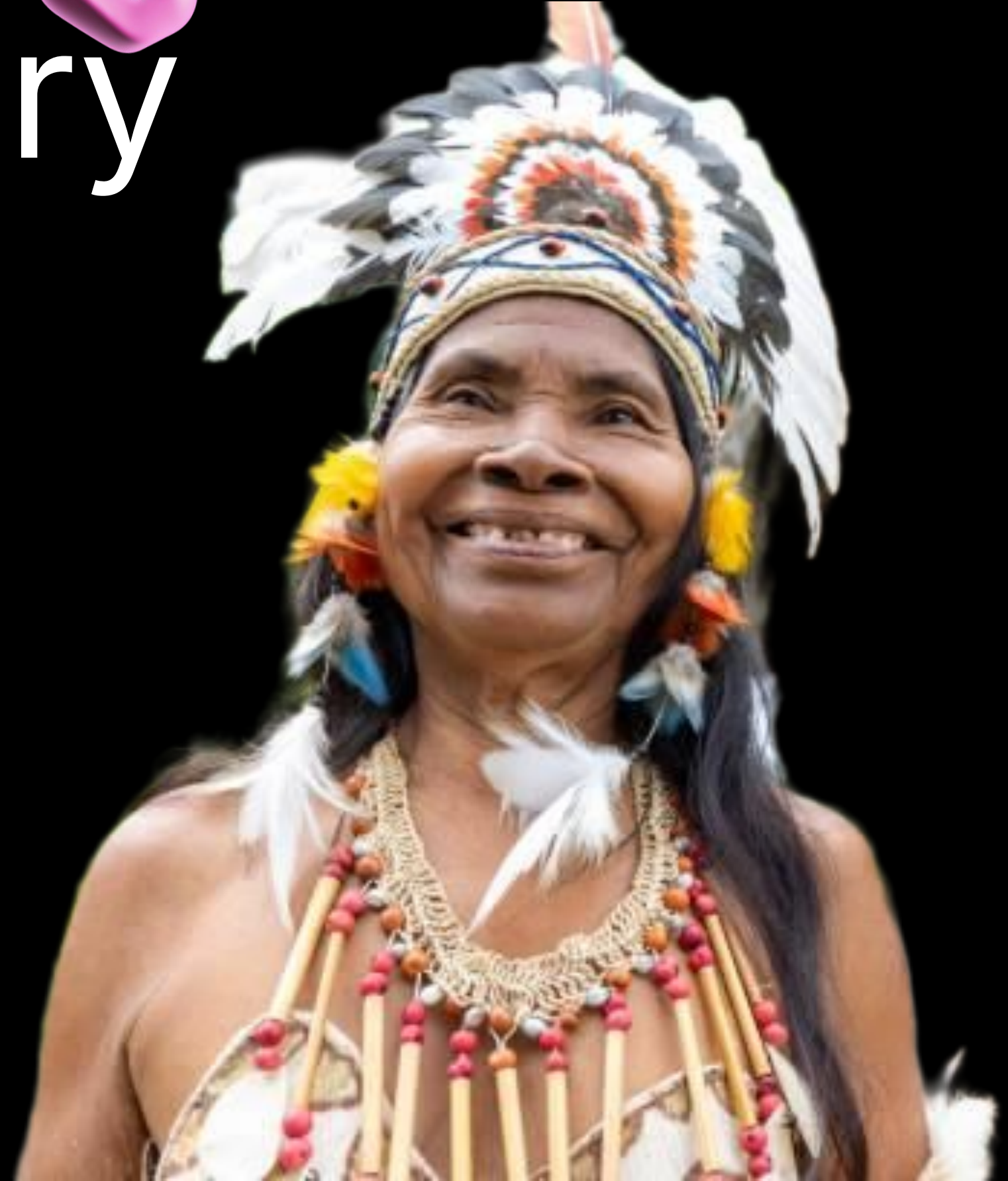
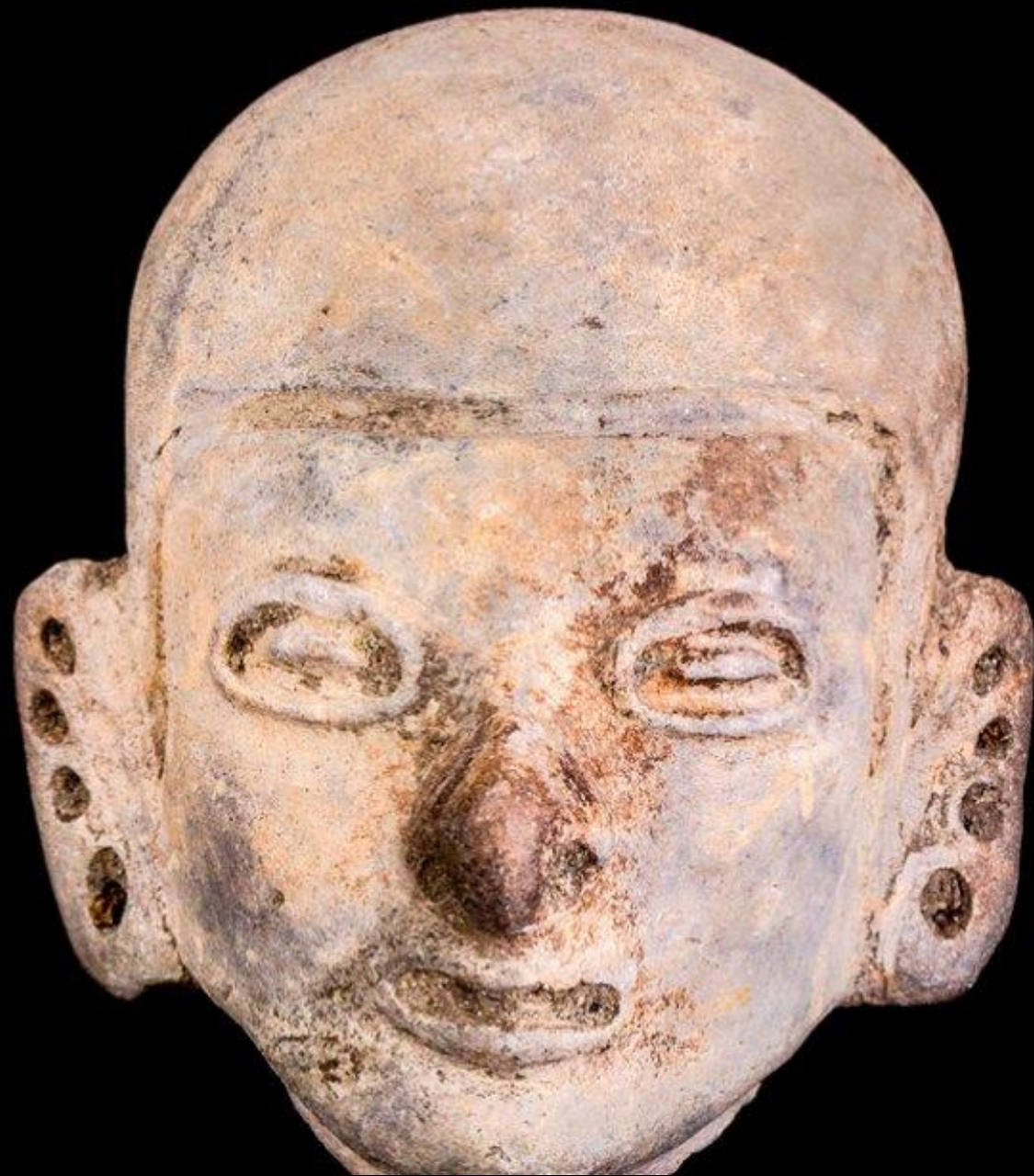
Medical
applications



The future

Ancient Origins

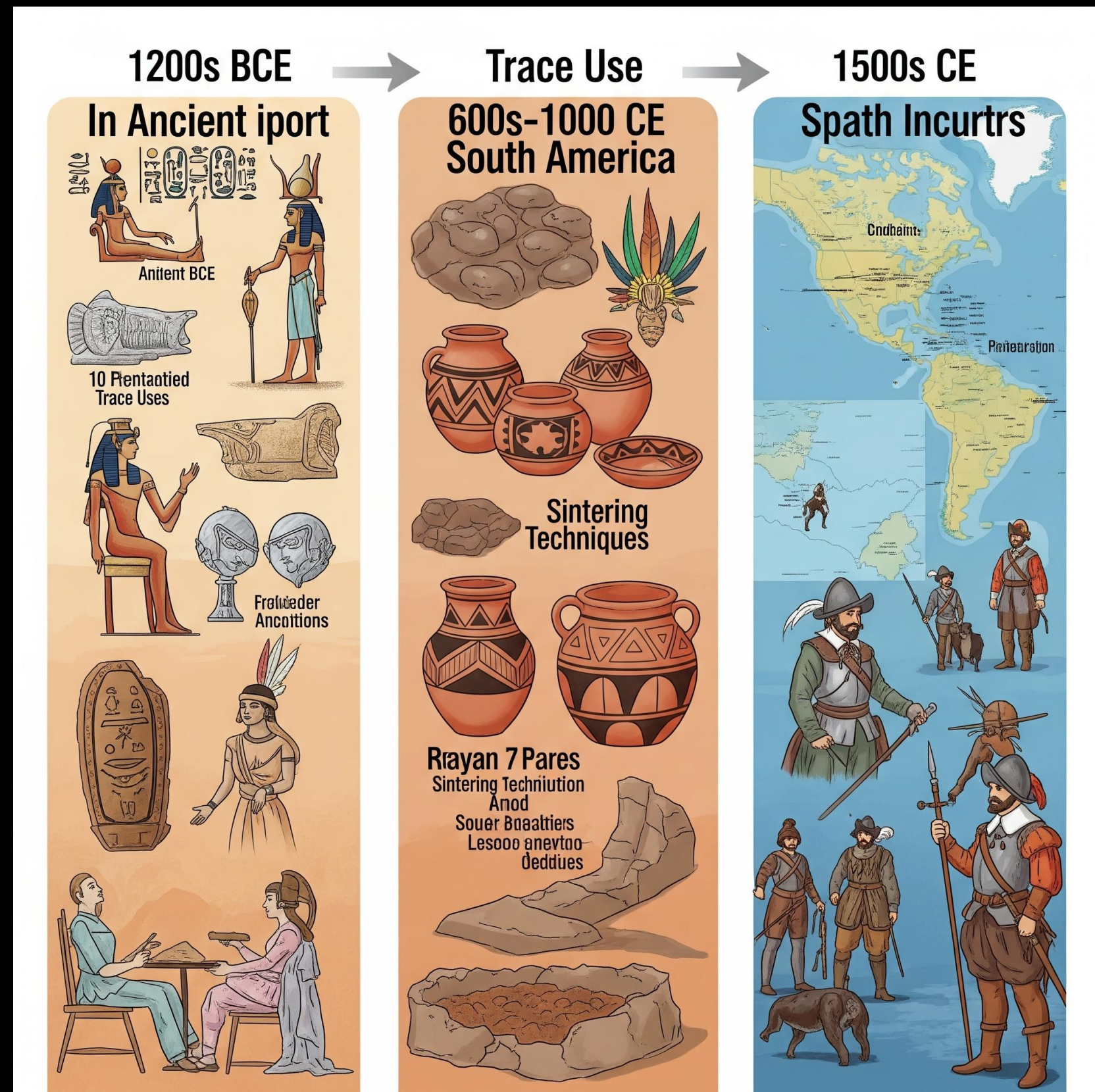
The Quitu Jewelry



Ancient Origins



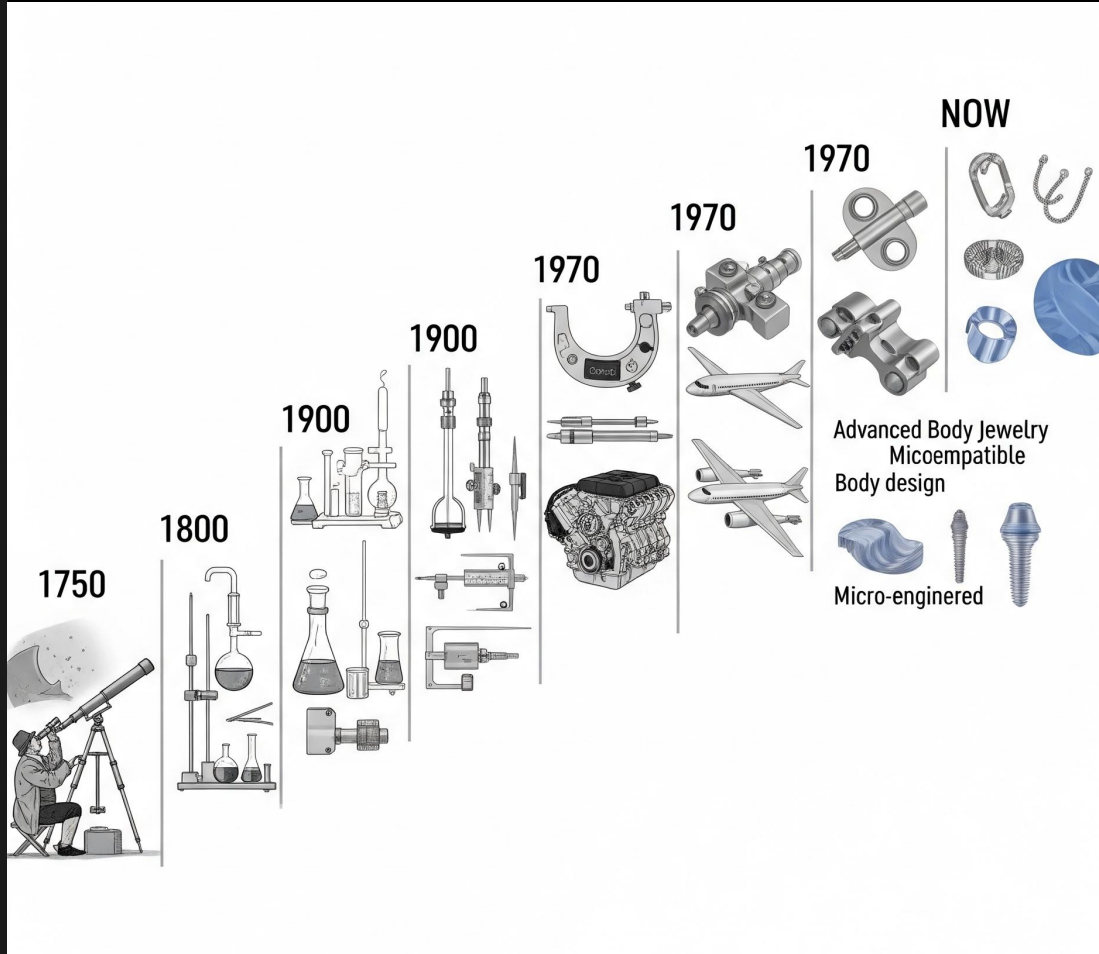
Ancient Origins



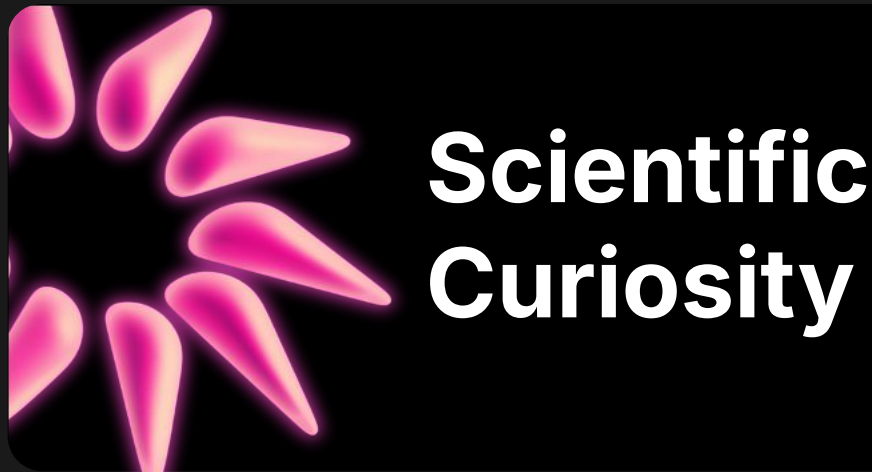
Discarded Platina

Industrial Discovery and rise





The Pt Timeline



Scientific
Curiosity

Platinum

Industrial Discovery



Pierre-François Chabaneau

from Labware
to aerospace



HIGH TEMP SENSORS

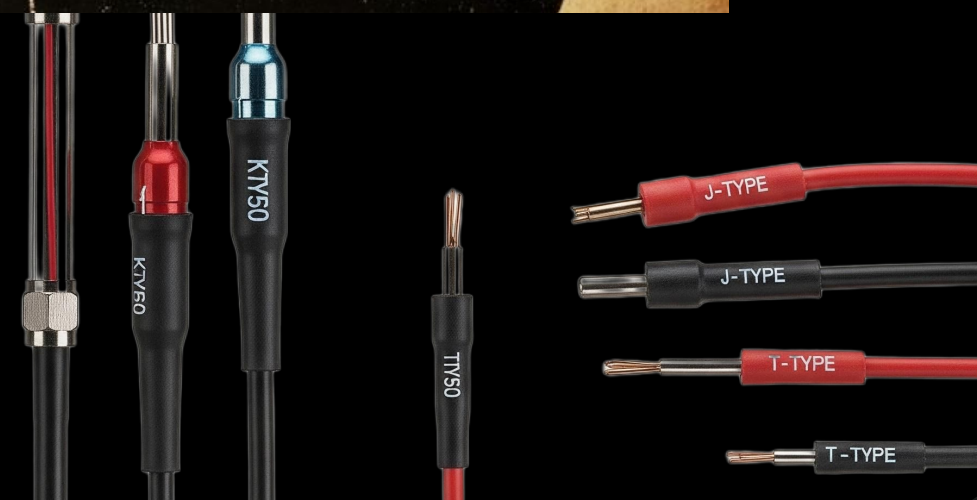
U.S. Government Bans Platinum for Jewelry – War Effort Takes Priority!

Ca



**Jewelry
ban**

1942



Platinum in Jewelry Through the Ages



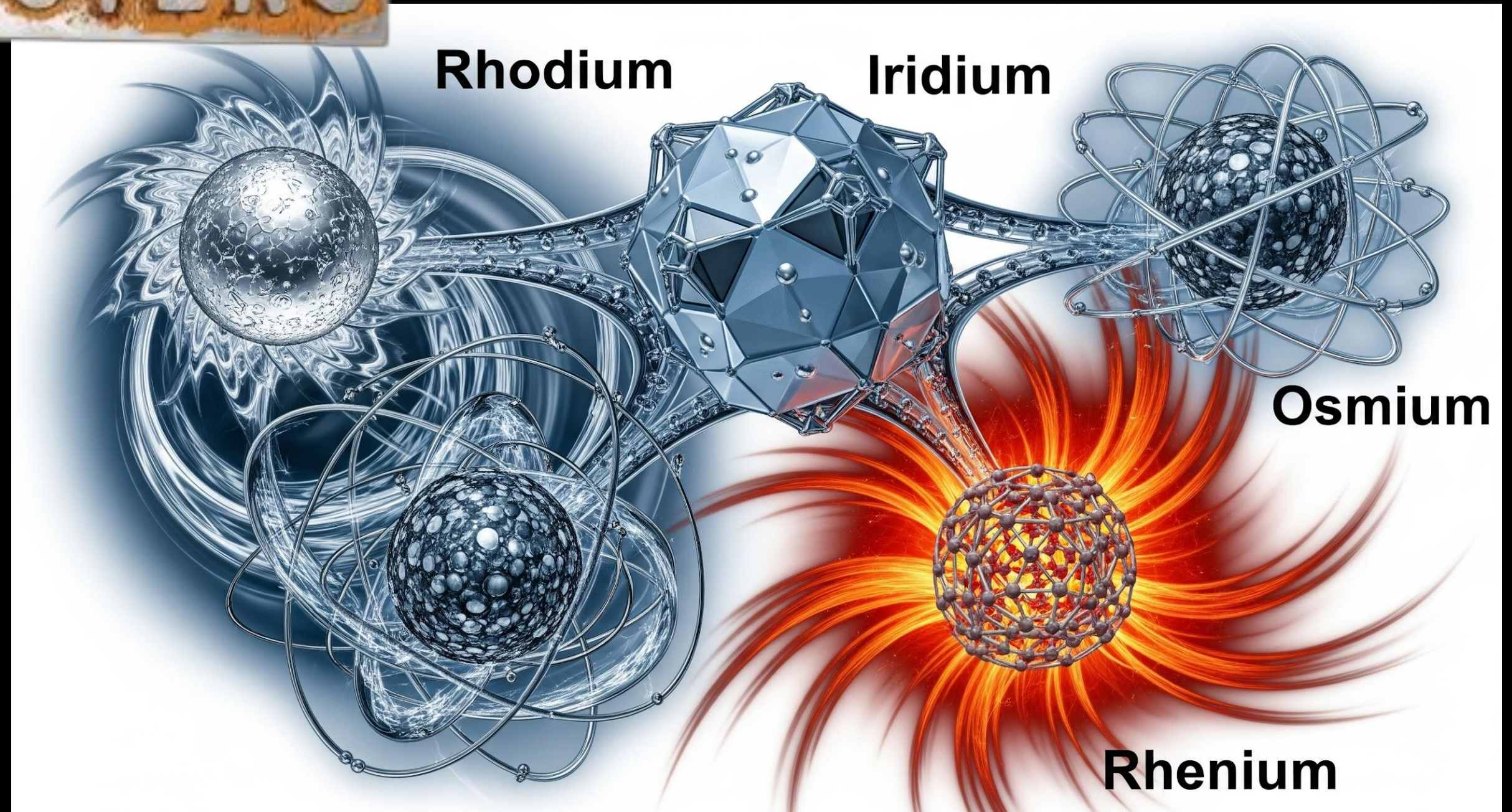
Cultural Perceptions of Platinum



Cultural Perceptions of Platinum



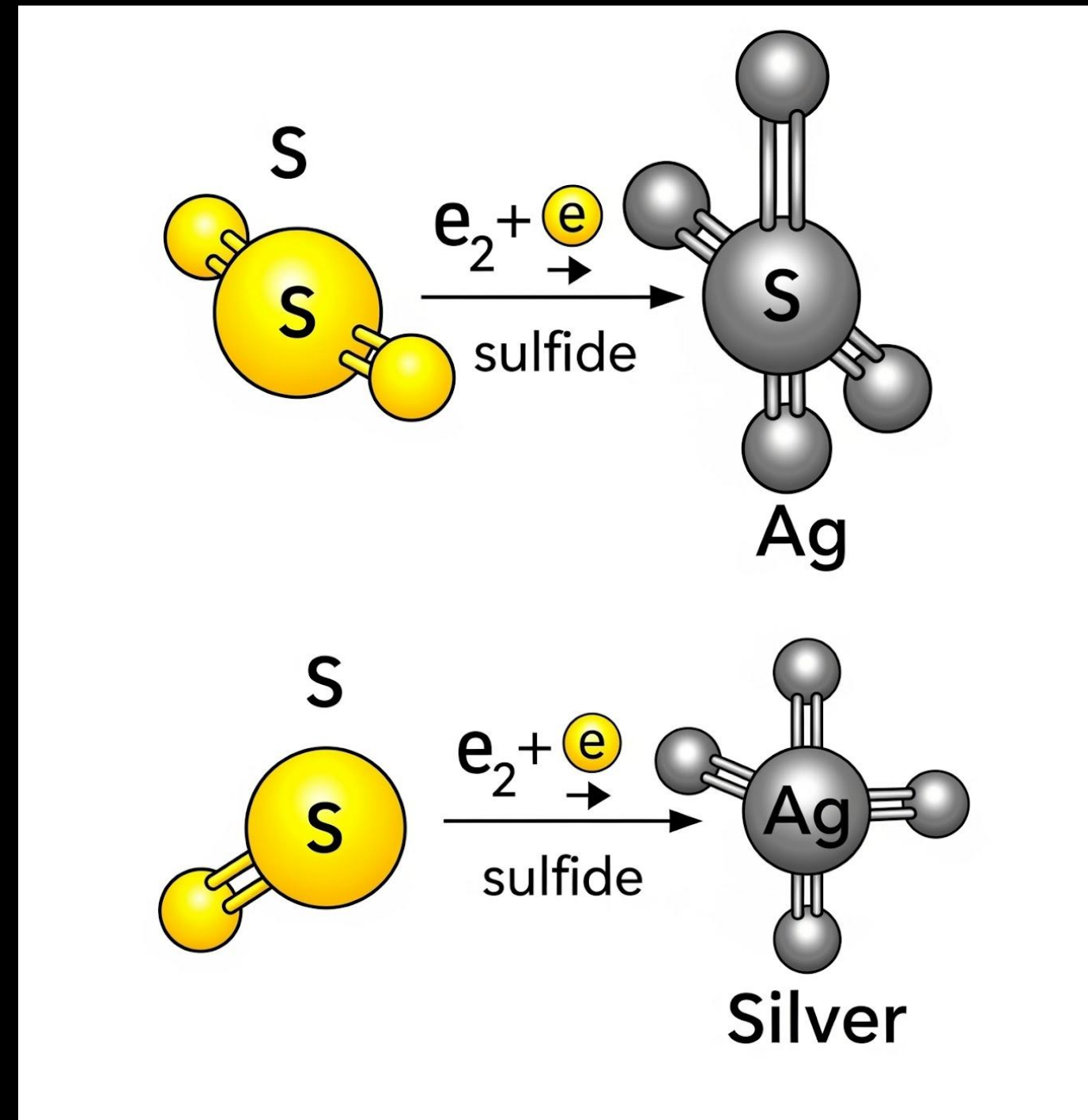
MYTHBUSTERS



**Where Platinum
sits among Noble
metals**



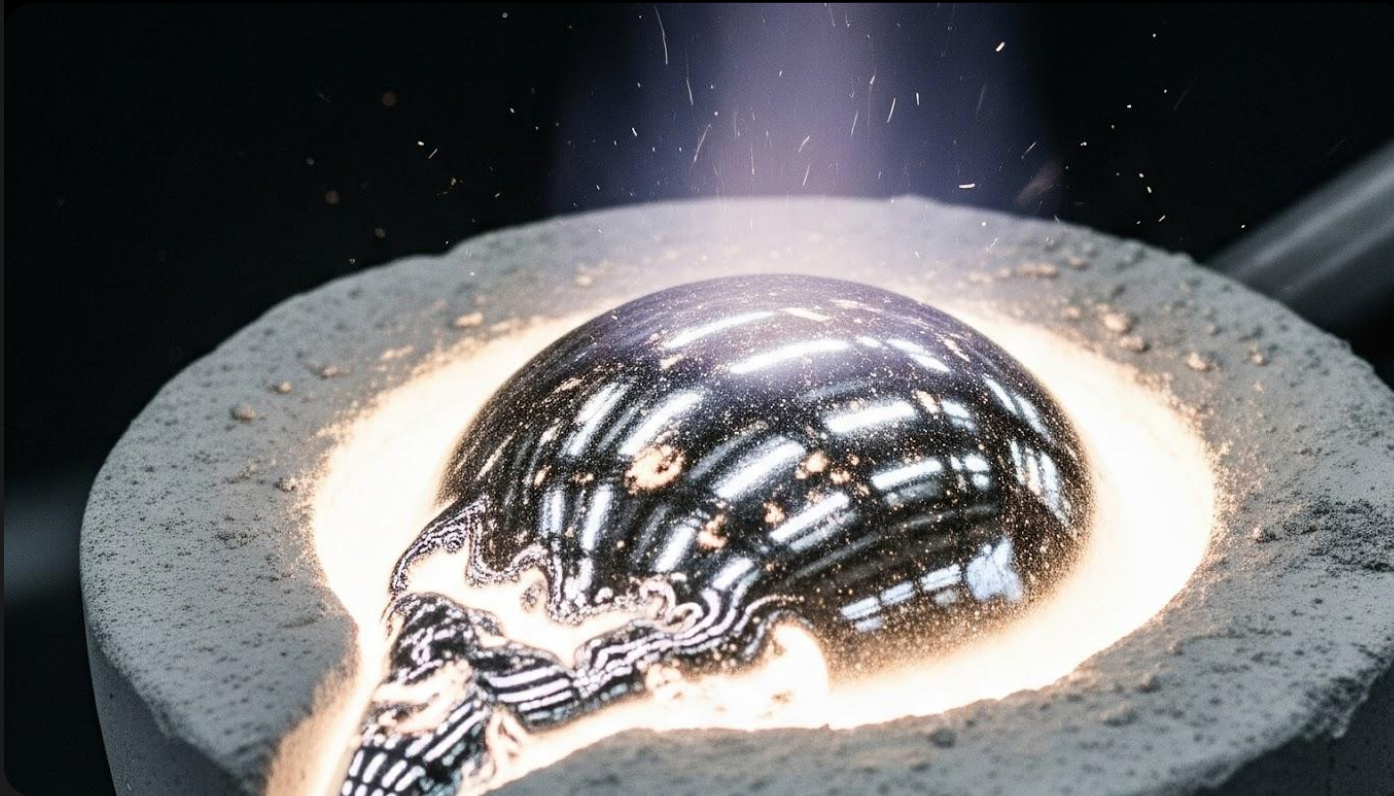
Why Silver Isn't on Our Noble Metal List.



Pt Facts

Melting point

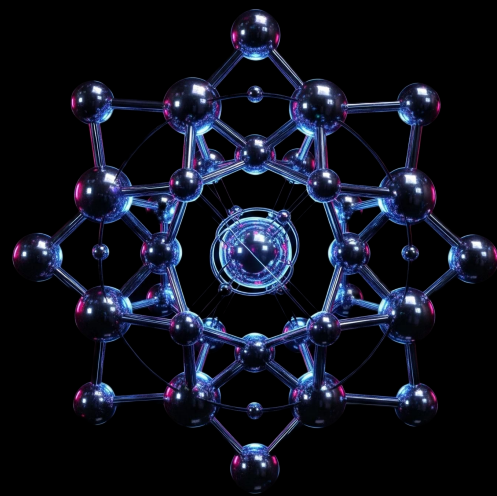
1,700°C / 3,200°F.



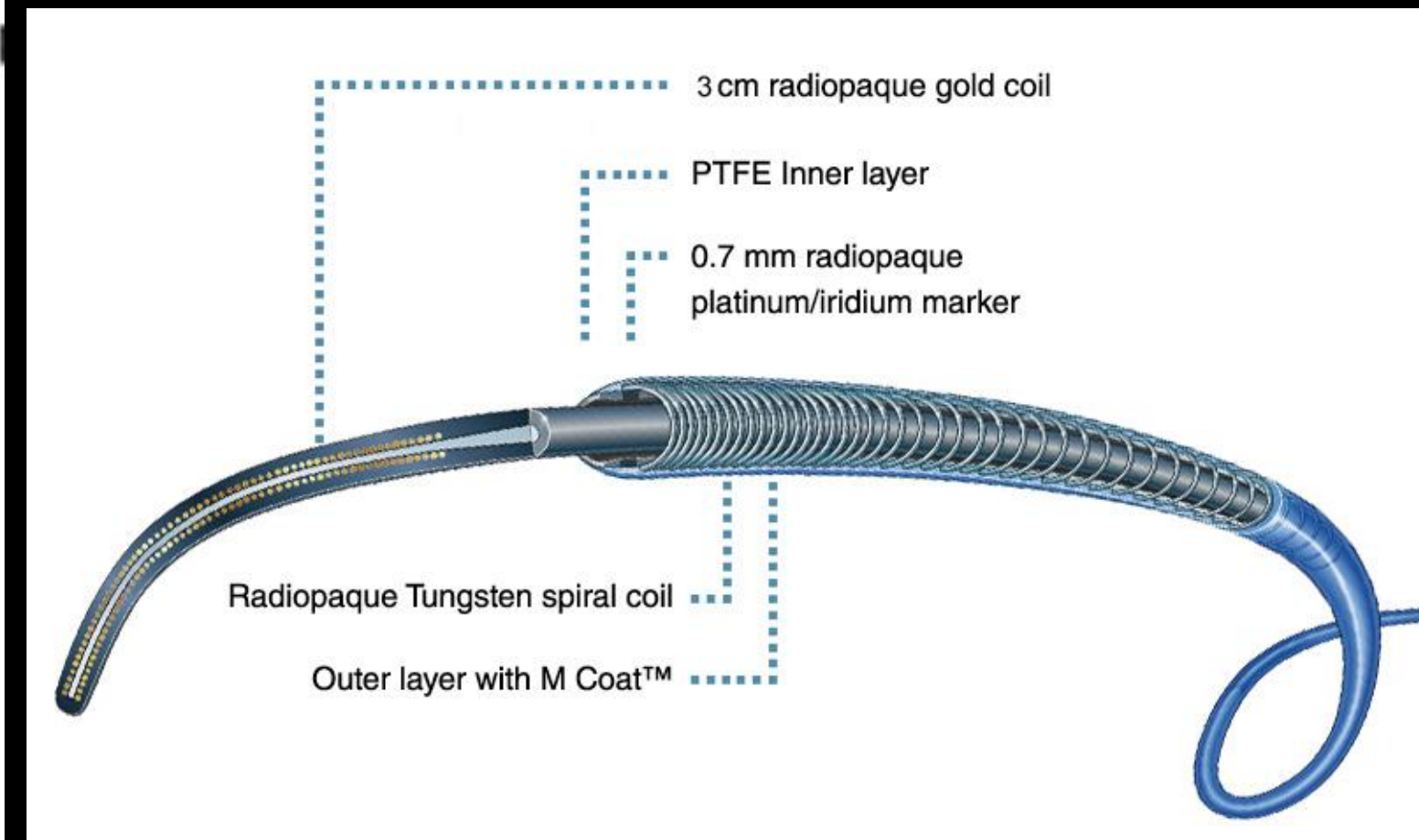
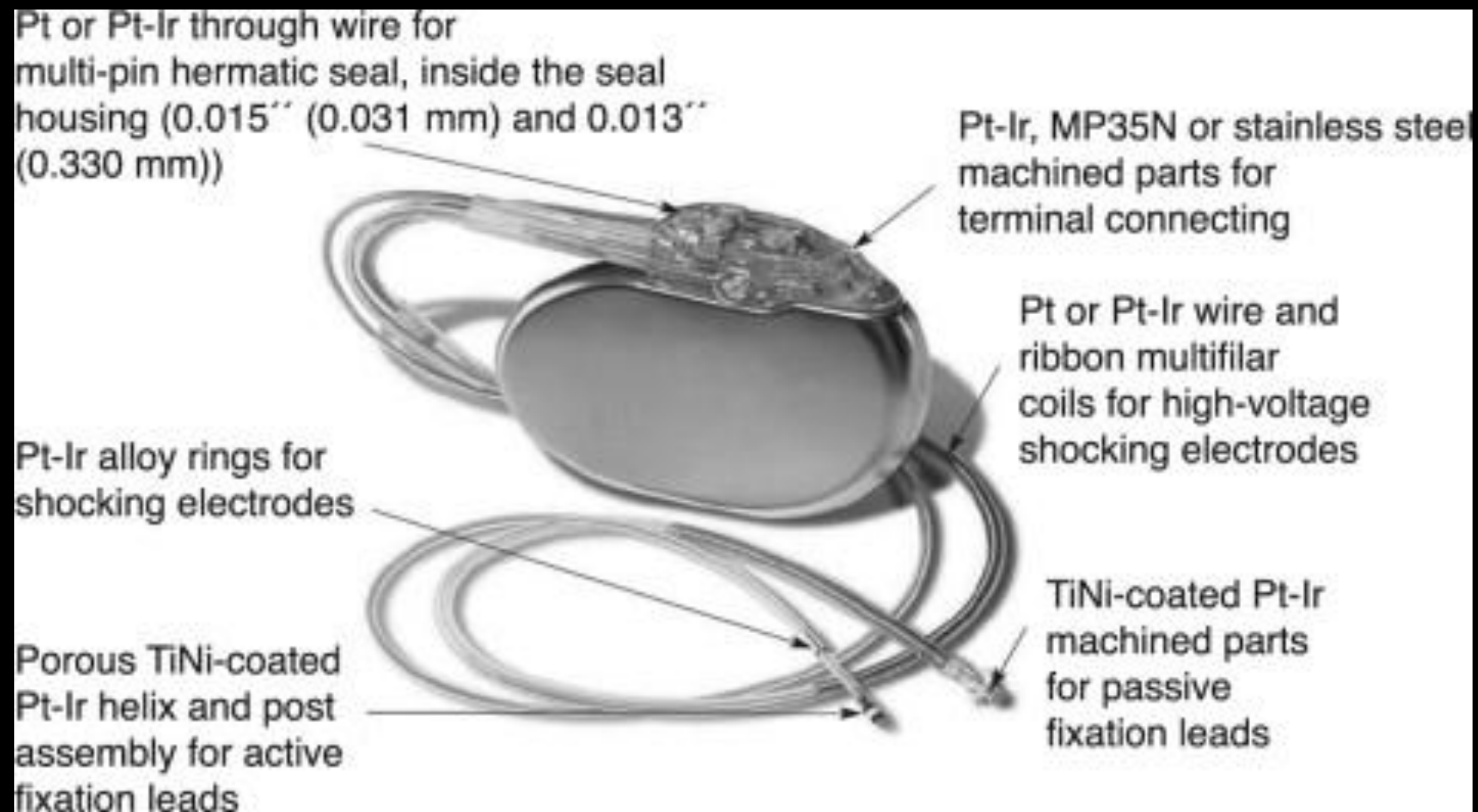
10 tons of Ore = 1 oz Pt

**Twice as dense as
Titanium**





Platinum in Medical Applications



Platinum in Body Jewelry

Biocompatibility matters

Biological Evaluation

Analytical
Chemistry Testing

Biocompatibility
Testing & Assessment

Toxicological
Risk Assessment

Biological Evaluation

**Analytical
Chemistry Testing**
ISO 10993-18

Identifies and quantifies what chemicals are leaching from the device that might interact with the patient. Utilizing the Nelson Labs Unique Compound Screener Database helps avoid unidentified compounds.

**Biocompatibility
Testing & Assessment**
ISO 10993 Series

A combination of written evaluations and biological testing to address risks or knowledge gaps regarding device biocompatibility.

**Toxicological
Risk Assessment**
ISO 10993-17

Evaluates the results of chemistry testing considering the risks of the device and nature of patient contact to determine safety.

Platinum in Body Jewelry

Biocompatibility matters

ISO 10993

³ Medical device categorization by			BIOLOGICAL EFFECT							
Nature of body contact		Contact duration								
Category	Contact		Cytotoxicity	Sensitization	Irritation of Intracutaneous reactivity	Systemic Toxicity (acute)	Subchronic Toxicity (subacute toxicity)	Genotoxicity	Implantation	Haemocompatibility
Surface Device	Skin	A: Limited (<24h)								
		B: Prolonged (>24h to 30d)								
		C: Permanent (>30d)								
	Mucosal membrane	A	*P	P	P					
		B	P	P	P					
		C	P	P	P					
	Breached or compromised surface	A	P	P	P					
		B	P	P	P		P	P		
		C	P	P	P					
External communicating Device	Blood path, indirect	A	P	P	P	P				P
		B	P	P	P	P				P
		C	P	P		P	P	P		P
	Tissue/bone/dentin	A	P	P	P					
		B	P	P	P	P	P	P	P	
		C	P	P	P	P	P	P	P	
	Circulating blood	A	P	P	P	P				P
		B	P	P	P	P	P	P	P	P
		C	P	P	P	P	P	P	P	P
Implant Device	Tissue/bone	A	P	P	P					
		B	P	P	P	P	P	P	P	
		C	P	P	P	P	P	P	P	
	Blood	A	P	P	P	P	P		P	P
		B	P	P	P	P	P	P	P	P
		C	P	P	P	P	P	P	P	P

Platinum in Body Jewelry

Biocompatibility is Not Binary

Copper 100ppm

Titanium 100ppm

Copper 50ppm

Titanium 60ppm

Platinum in Body Jewelry

Cumulative exposure



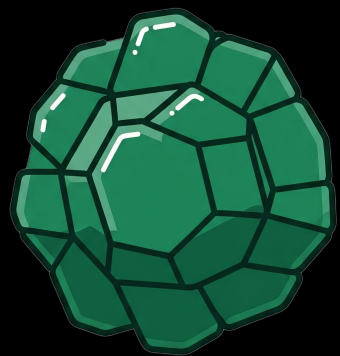
Platinum in Body Jewelry

Cumulative exposure

Metal	Typical Purity %	# of alloying elements	Nickel Risk	Cumulative load
Steel	65	4+	Moderate / high	High Potential
Gold (14k)	58.6	3	variable	Medium - High
Platinum 950	95	1	Very Low	Low



**Cost
Prohibit**



Weight!?

The Challenges



**Fabrication
Challenges**

**Supply
Chain**

Safe > Practical

Platinum in Body Jewelry

Sourcing and Ethics in Platinum Use



Platinum in Body Jewelry

Practical, Ethical, and Safe When Done Right



**Pt950Ir = 95% Pt
5% Iridium**

**Pt950Ru = 95% Pt
5% Ruthenium**

**Pt900Ir = 90% Pt
10% Iridium**

Ideal alloys

**Not all Pt is
created
equal**



ISO 10993

ASTM F2999

**If only says
"Platinum" ask
more questions**





**Federal trade
commission**



FTC Guidelines & Hallmarking



**Hallmark is
not required
in the US.**



US vs EU

**"Platinum" label can only be used on 95% Pt.
any lower alloy needs to be specified**

The Future of Platinum in Body Jewelry

From Niche to Next-Gen?

From Aerospace to Body Jewelry: The Platinum Revolution

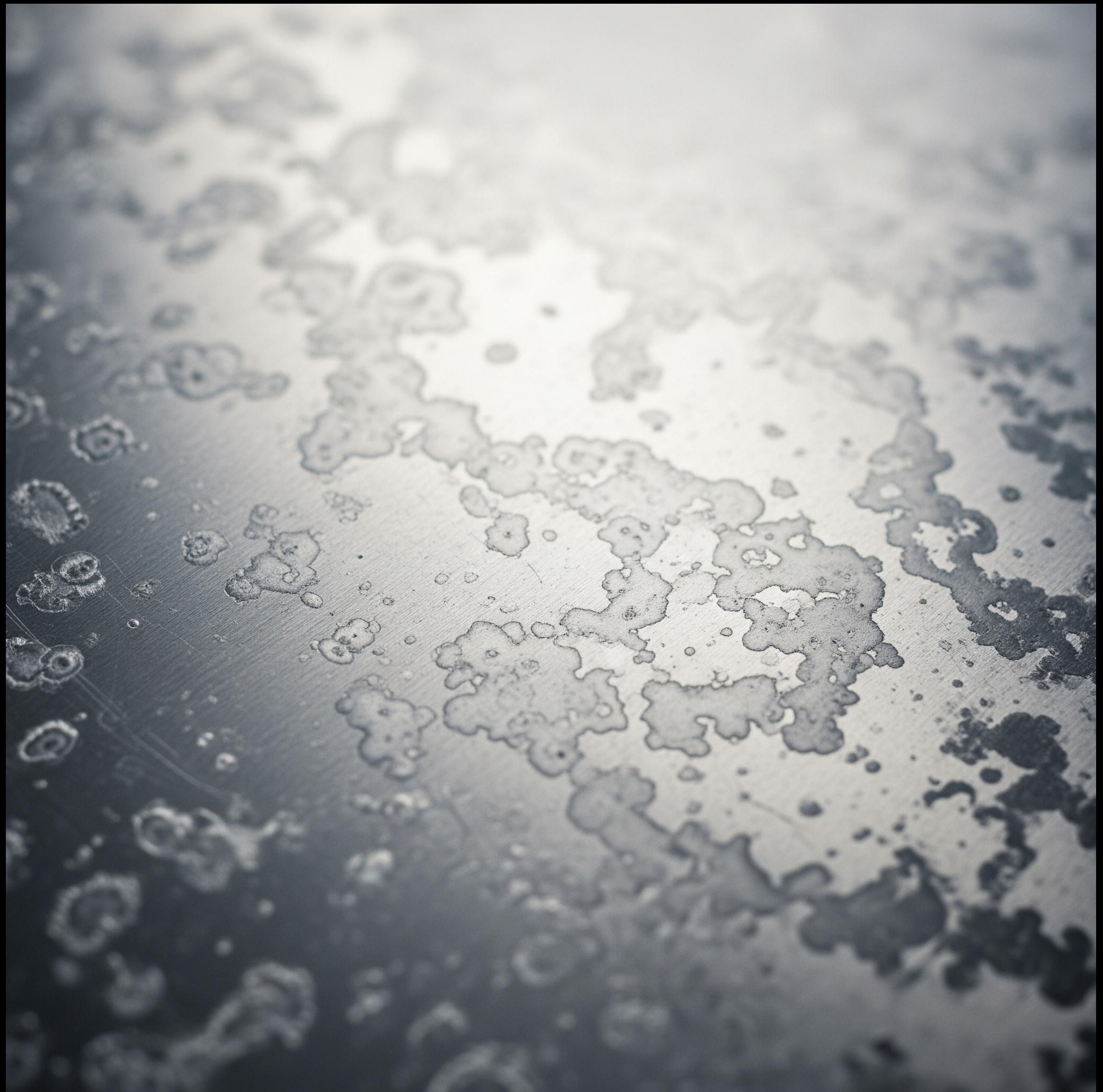


The Future of Platinum in Body Jewelry

Is Stuller Inovium PtRu
the answer to castable
grain?



Platinum patina



Platinum patina

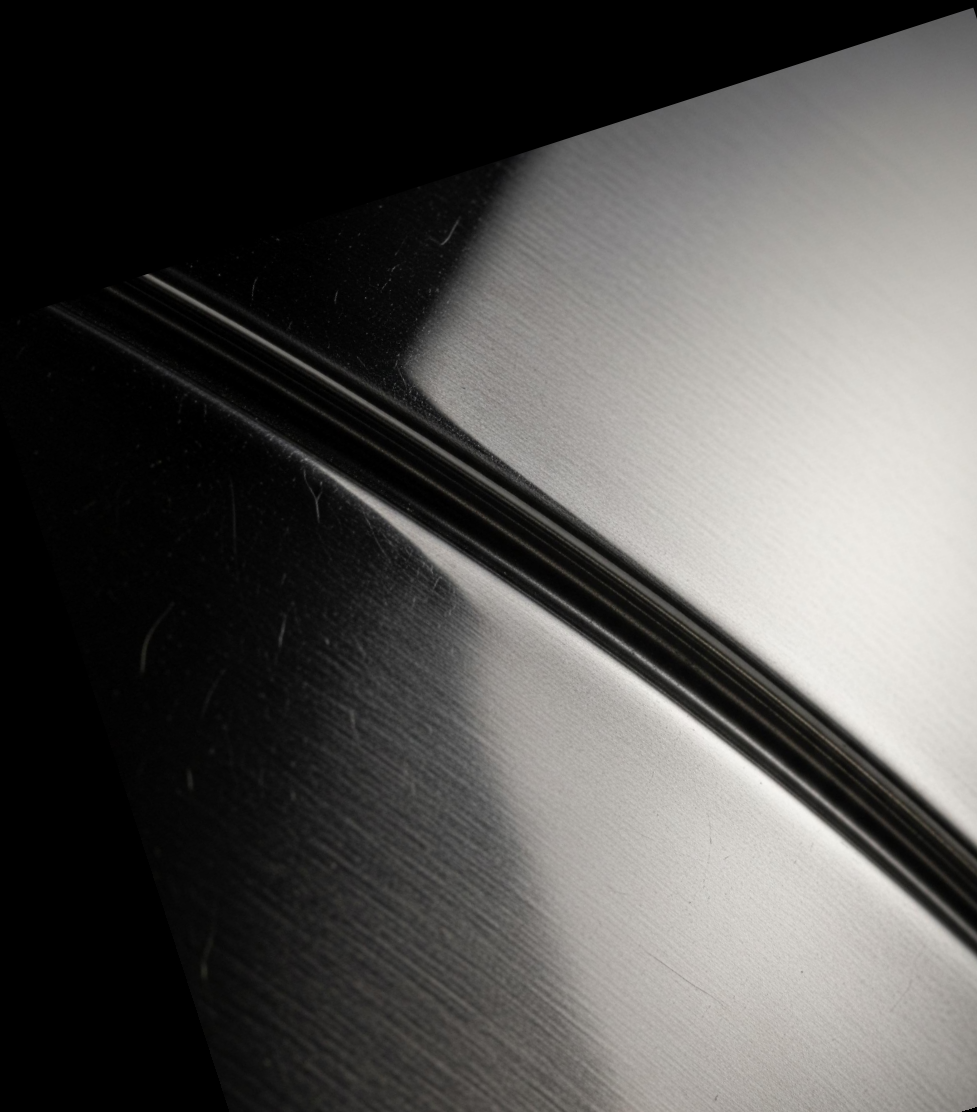
***"I love how it feels like my
piece evolved with me."***



Platinum patina



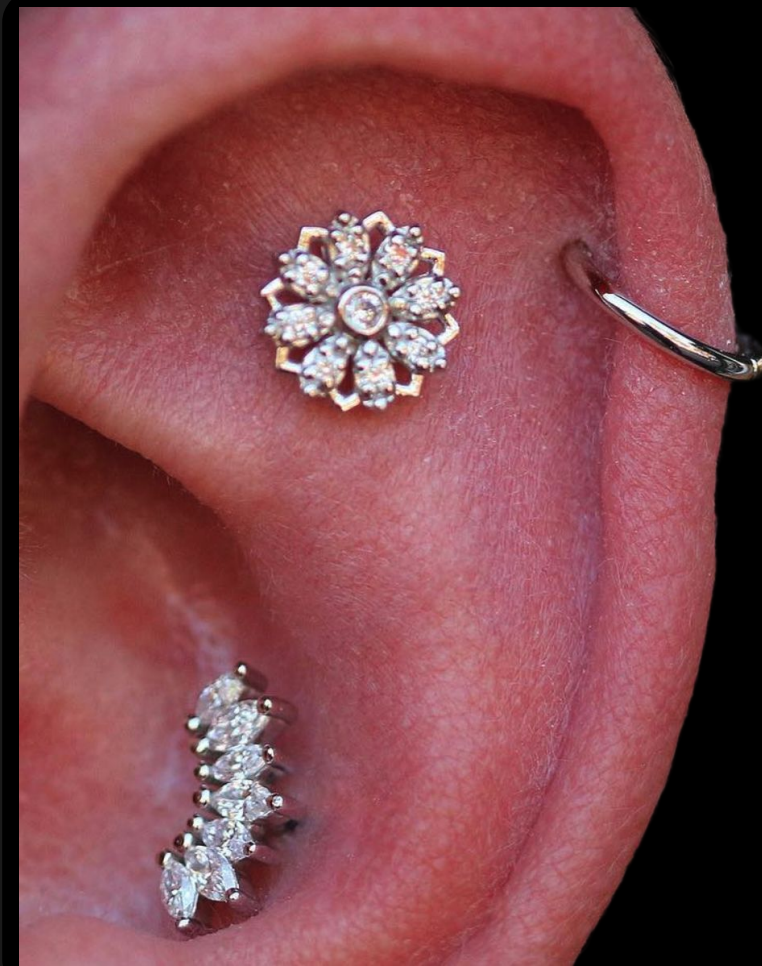
- Patina means damage – False
- It needs constant polishing – False
- It's normal, safe, and reversible
- Some clients request it on purpose



**We color
coded our Pt
displays**



**How we use it at
Lemonade Piercing**

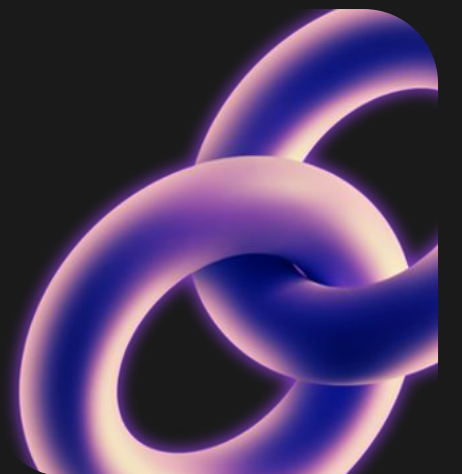


**Creating
the
Conditions
for Platinum
to Thrive**

**We offer 3
price tier,
same
safety,
different
investment**

**Titanium
Gold
Platinum**

**It help us reposition gold — what once felt
expensive now feels like the smart middle
choice.**





Additional resources

The Platinum
guild



Pt in 3d Printing

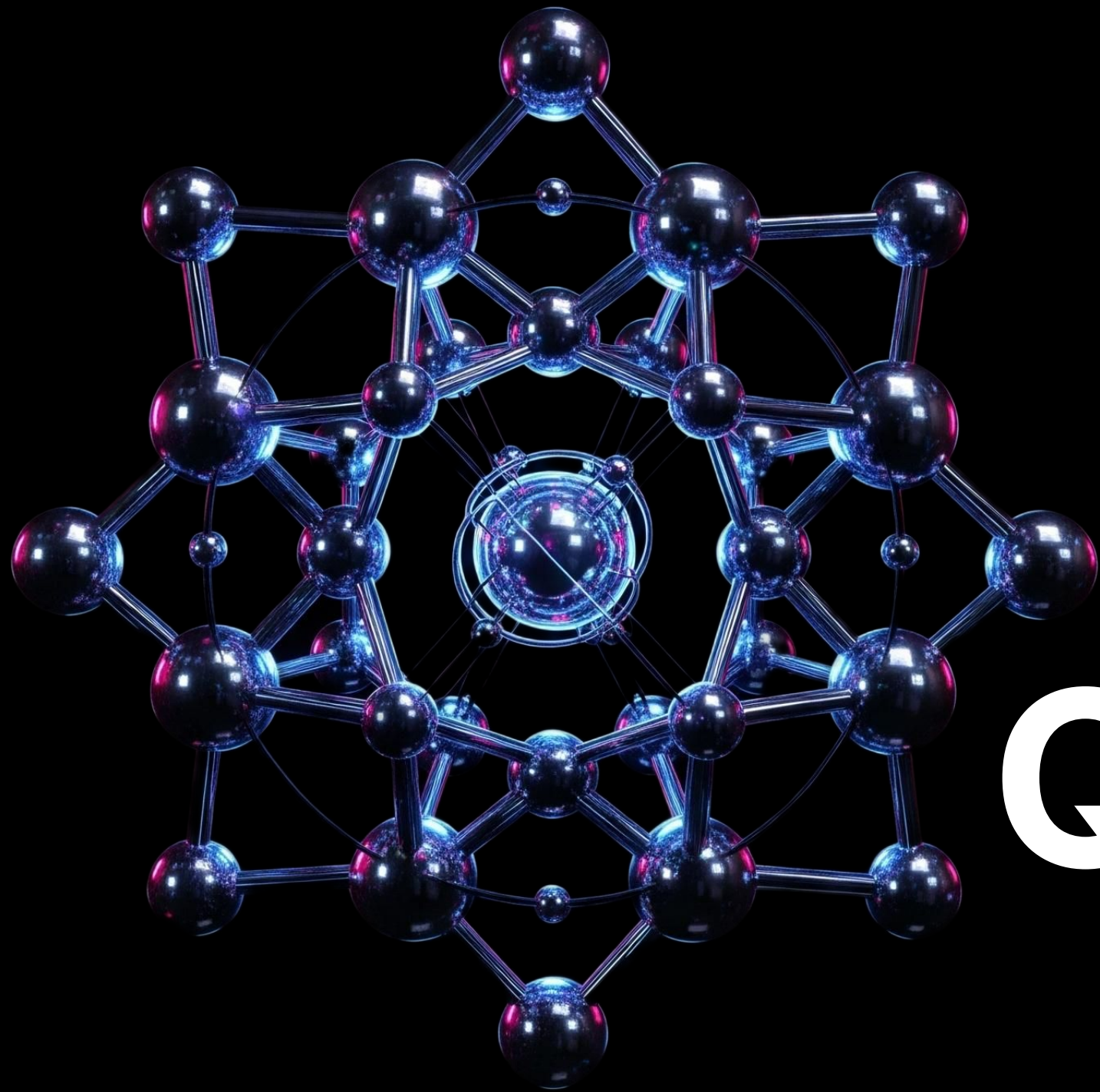
Jewelry Vigilance
Committee



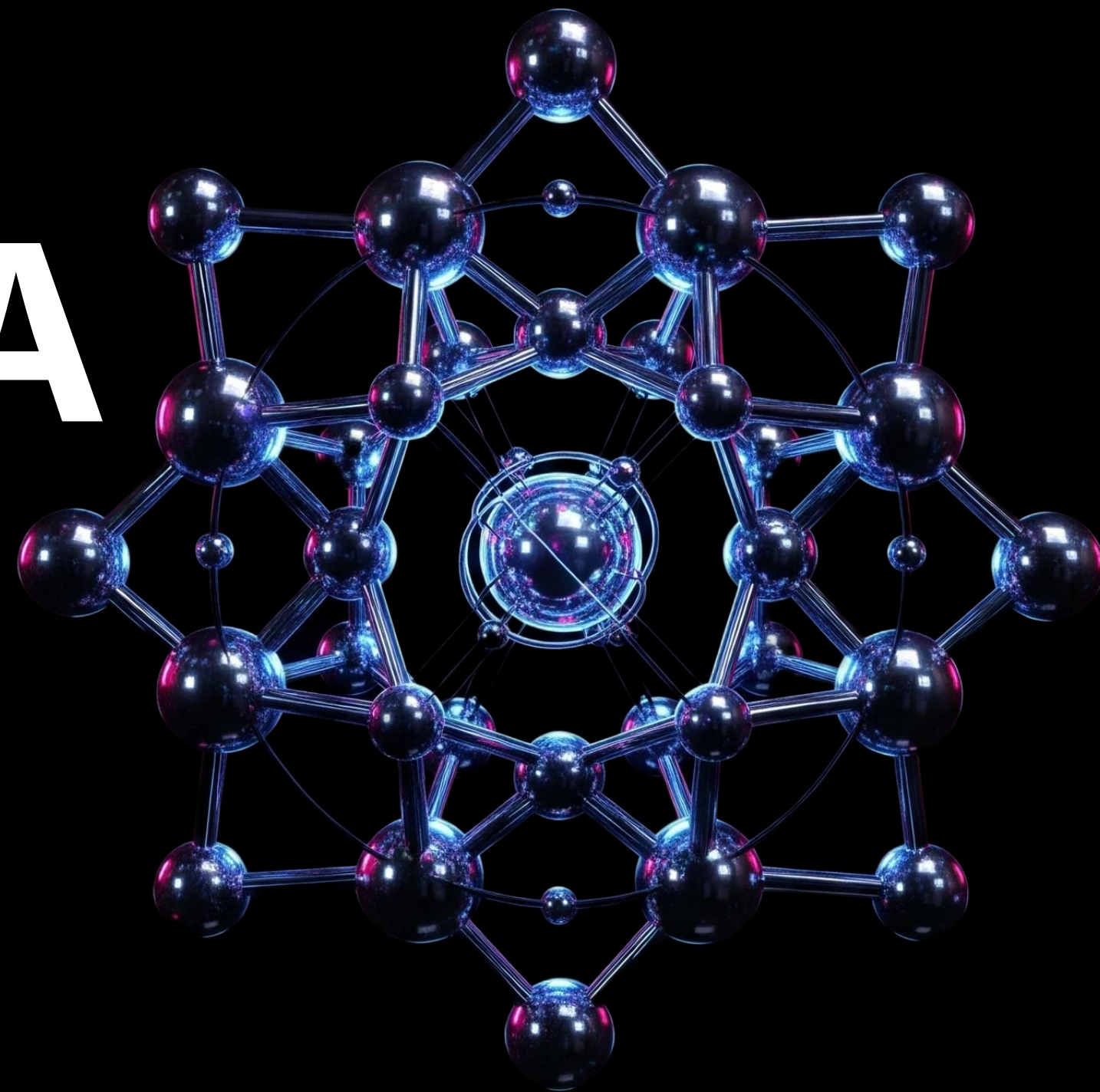
SANTA FE
SYMPOSIUM



JEWELERS
OF AMERICA



Q&A



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Thank you
PabloPerelmutter.com