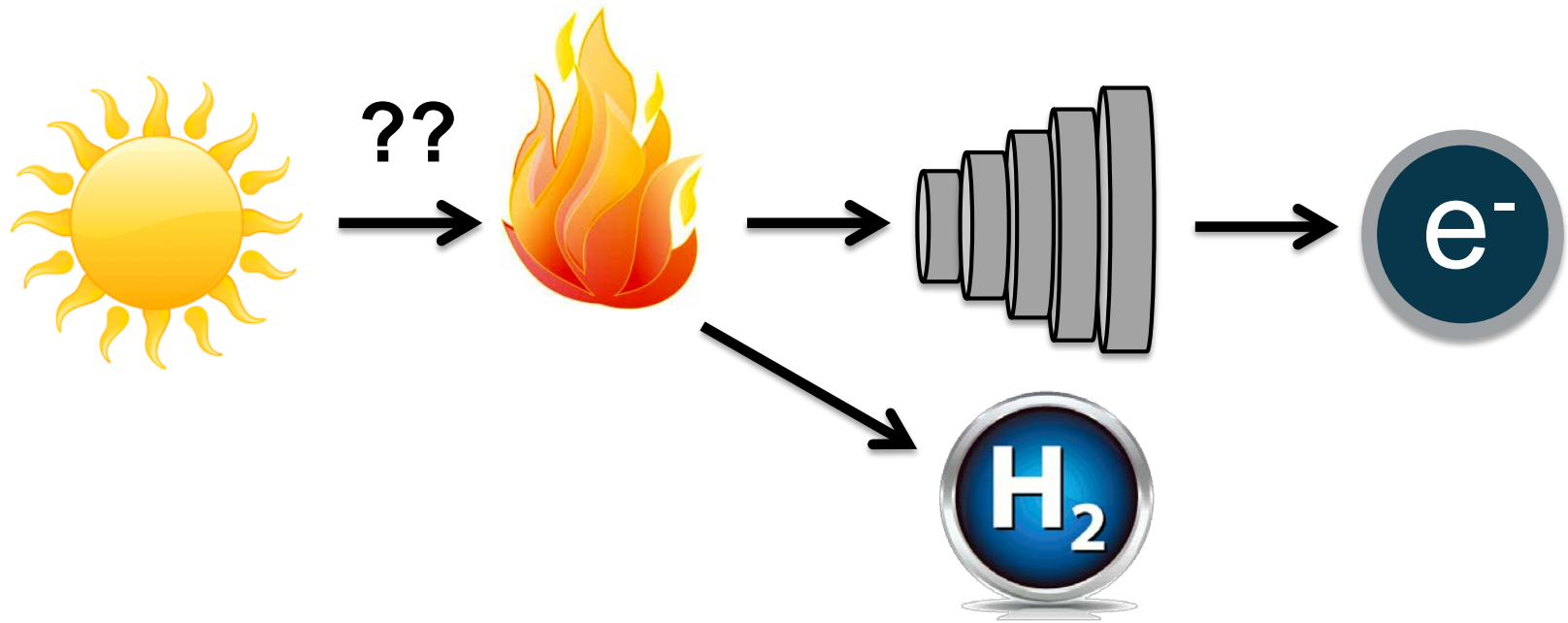
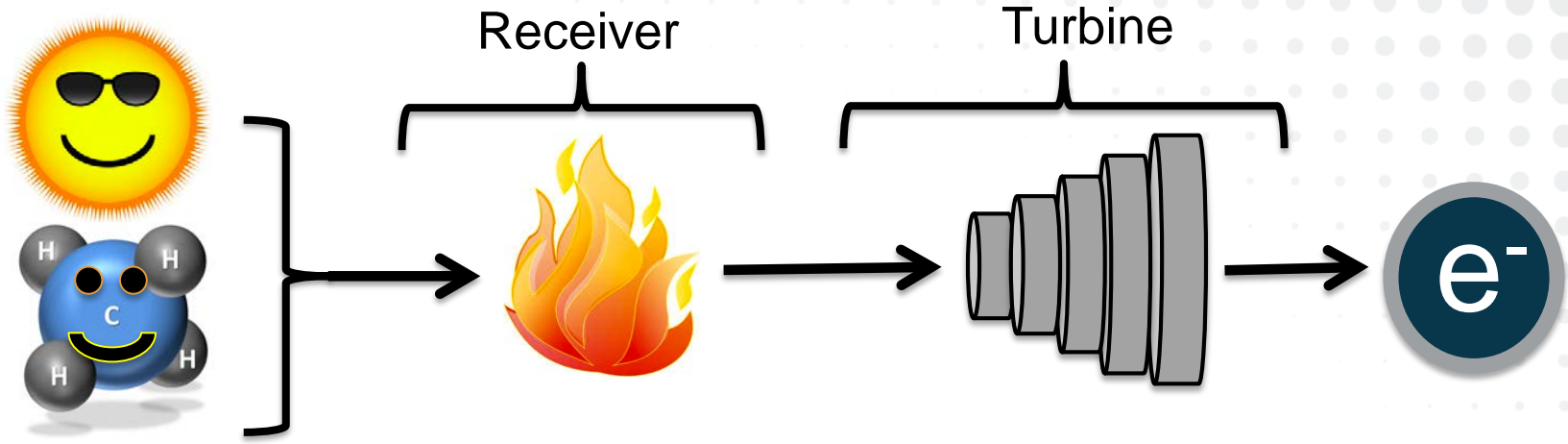


# MORE **LIGHT** THAN **HEAT** RE-DESIGNING SOLAR THERMAL



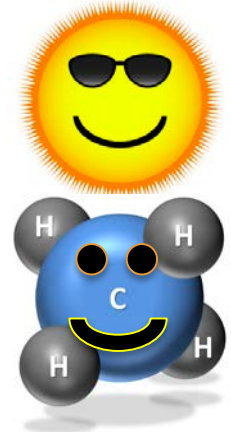
David Brown, ARPA-E Fellow



Electricity Cost*
24 c/kWh
7 c/kWh

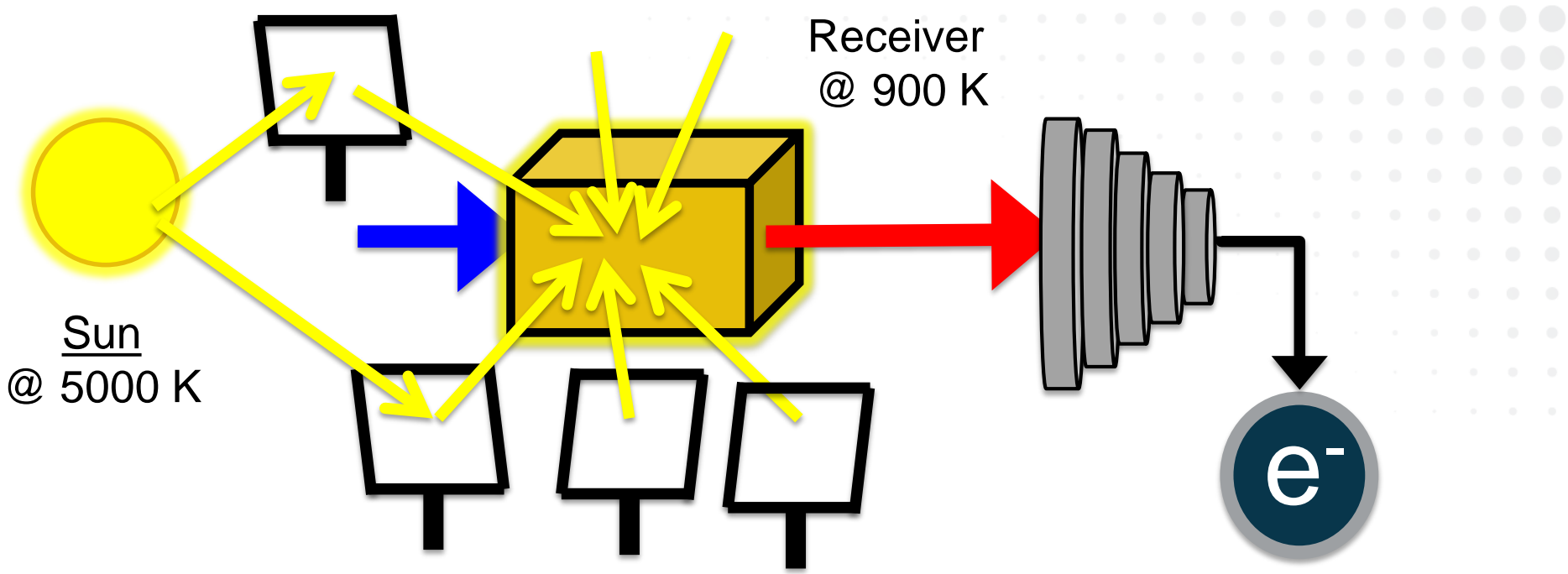
\*source: EIA

Feedstock



Efficiency	Temperature
~30%	~900 K
~60%	~1800 K

Challenge: Double Solar Receiver Temperature

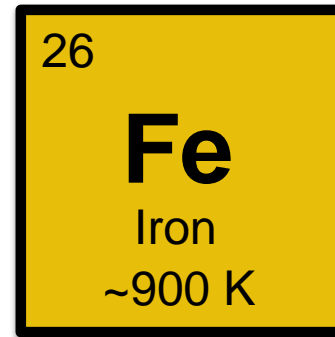


High T + High P + Time =



More Temperature, More Problems.

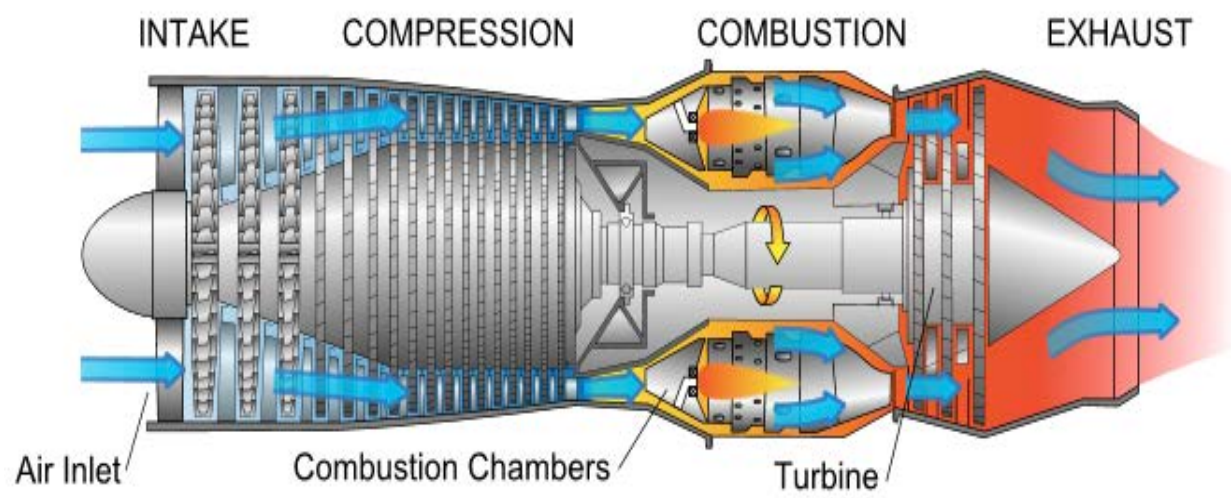
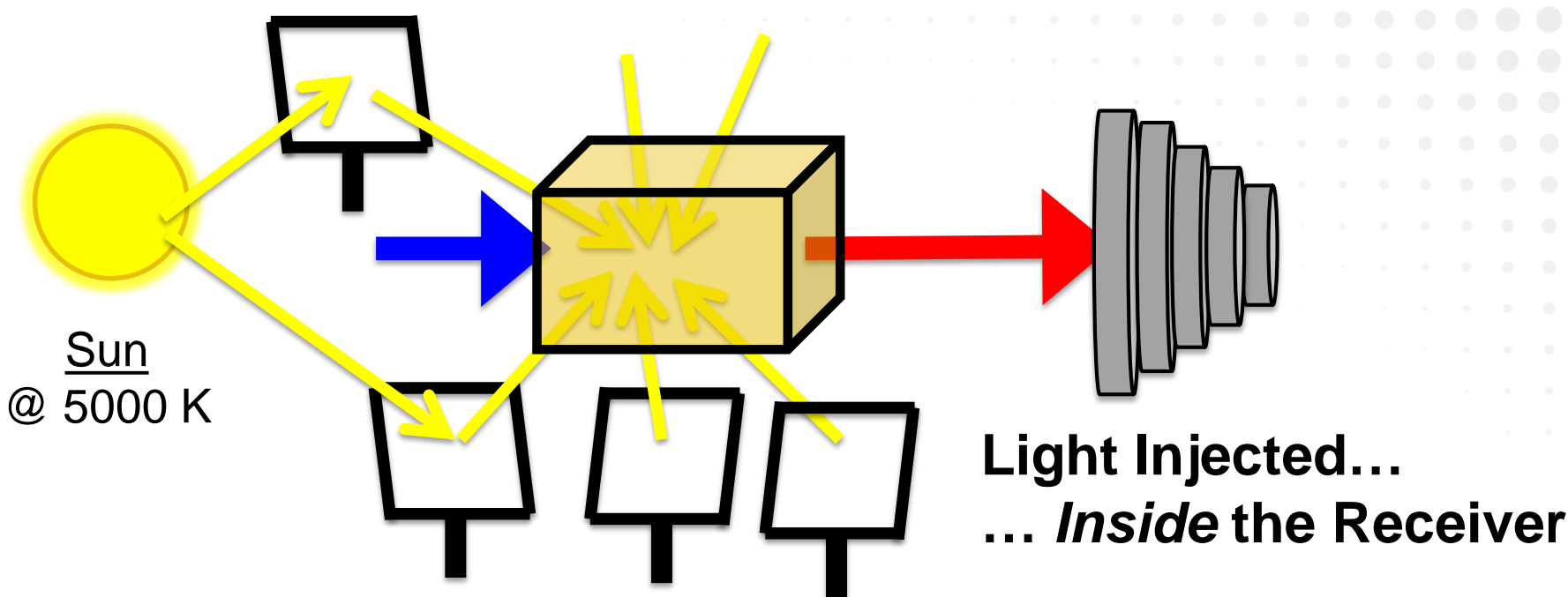
~\$1/Kg



~\$10/Kg

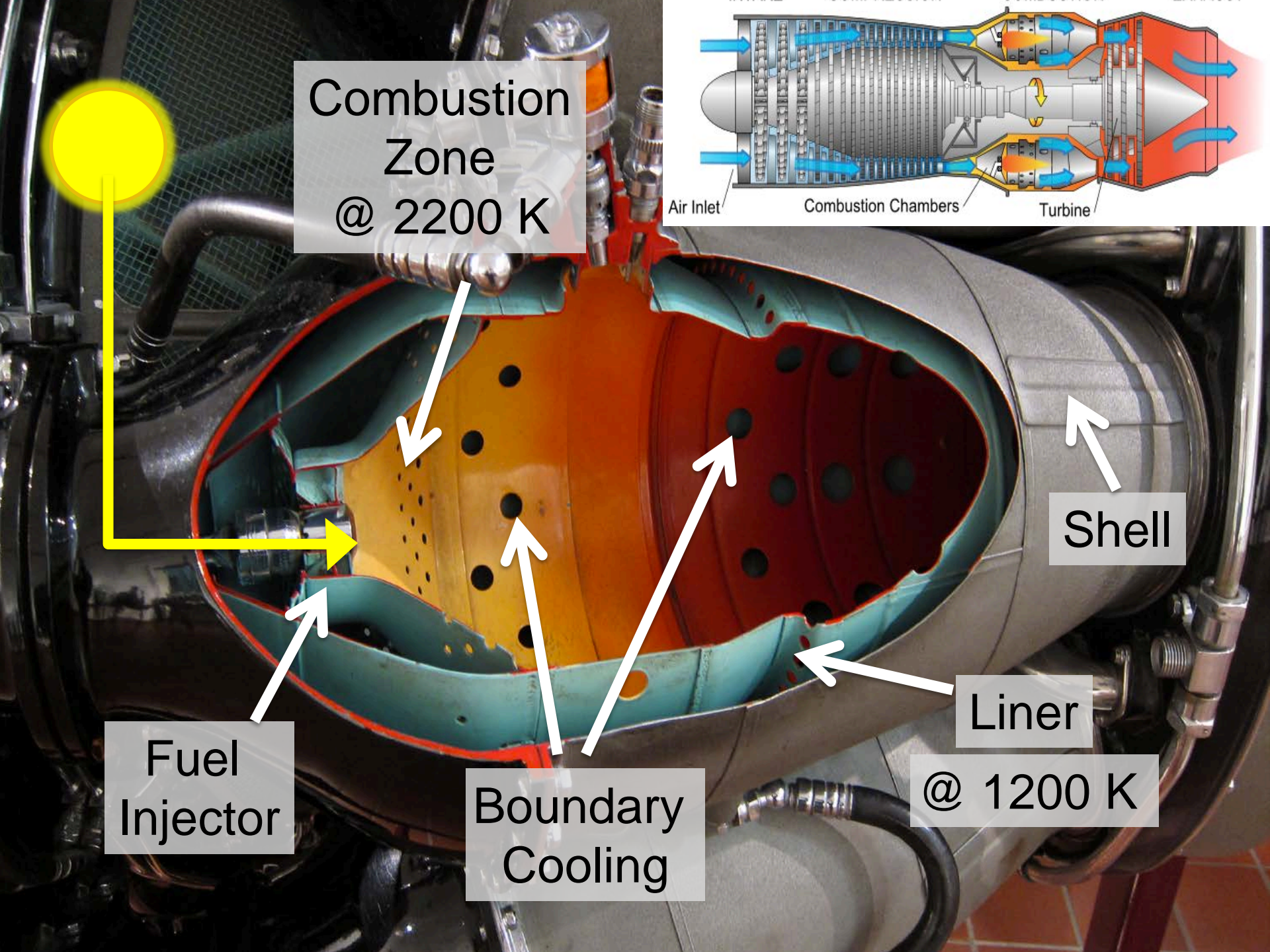


Better Materials, Bigger Costs.

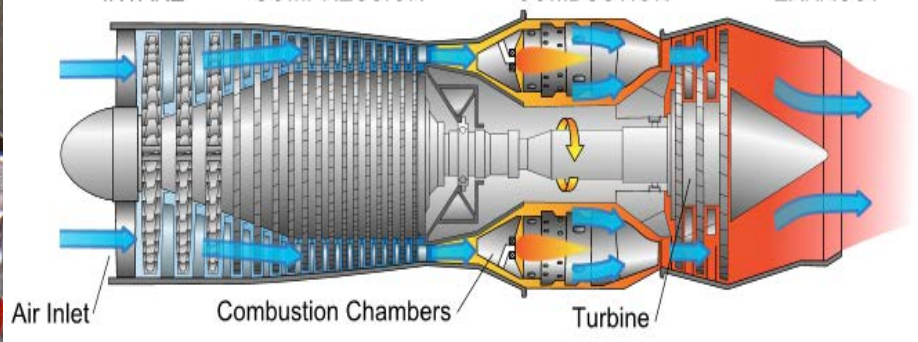


- Gas Combustor
- Fuel Injection
  - Boundary Cooling





Combustion  
Zone  
@ 2200 K



Shell

Liner

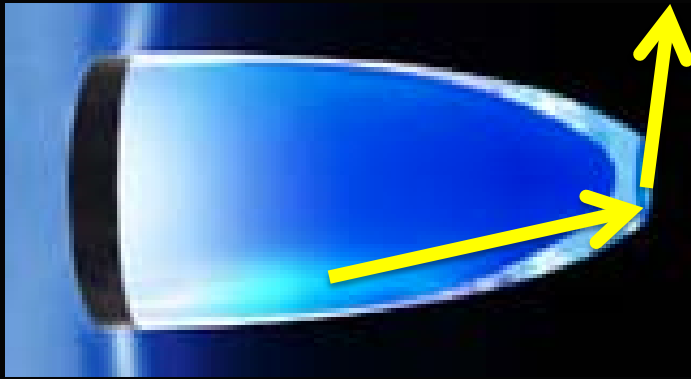
@ 1200 K

Fuel  
Injector

Boundary  
Cooling

# Optical Injection Receiver: Critical Needs

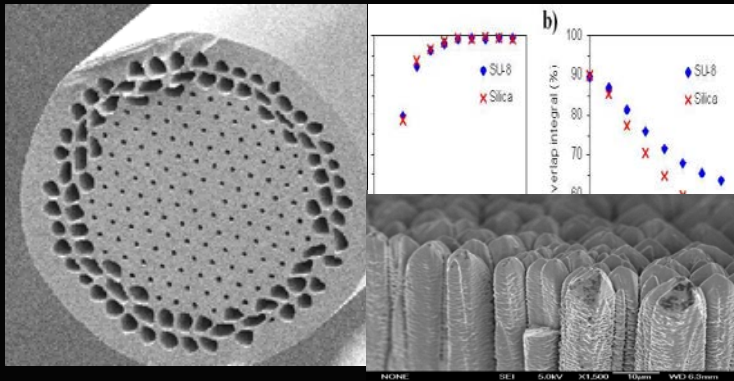
10,000+ Sun Concentration



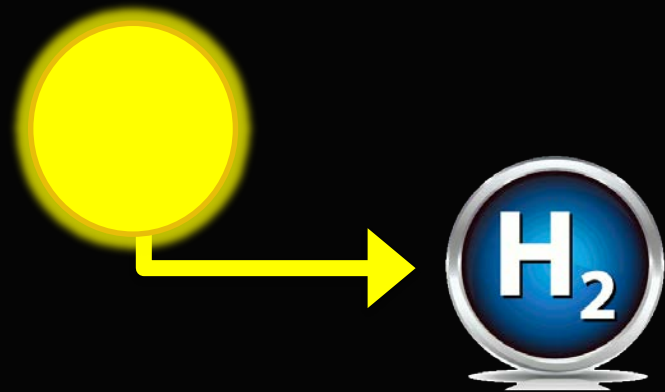
System Re-Design



Solar Waveguide

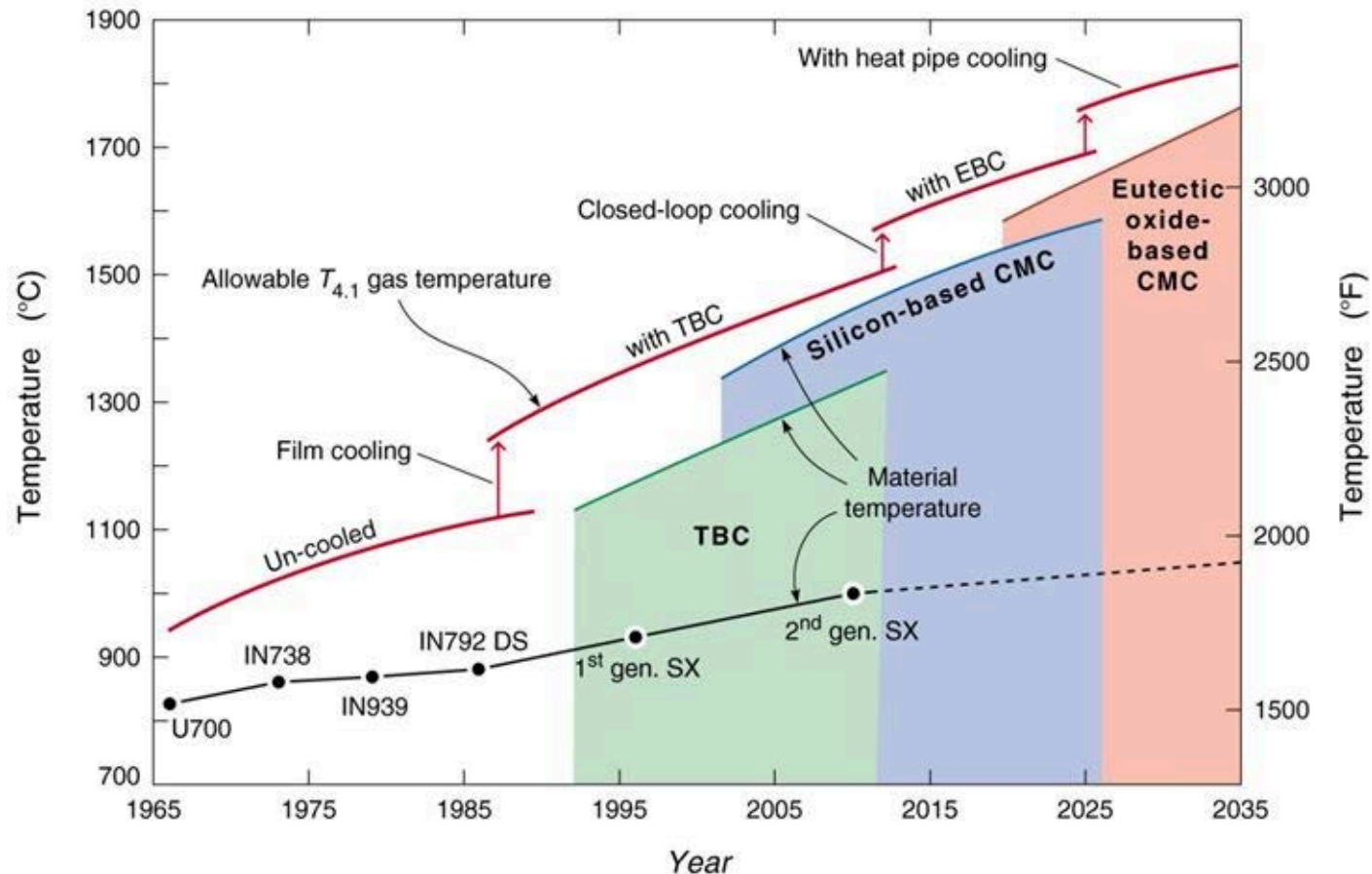


Solar Fuel Production





# Next Step: Feedback From You



Can Solar Thermal follow Natural Gas' Trajectory?