



WPI

Gravity-Driven Multiple Effect Thermal System (G-METS) Distillation for Efficient Low-Cost Magnesium Refining

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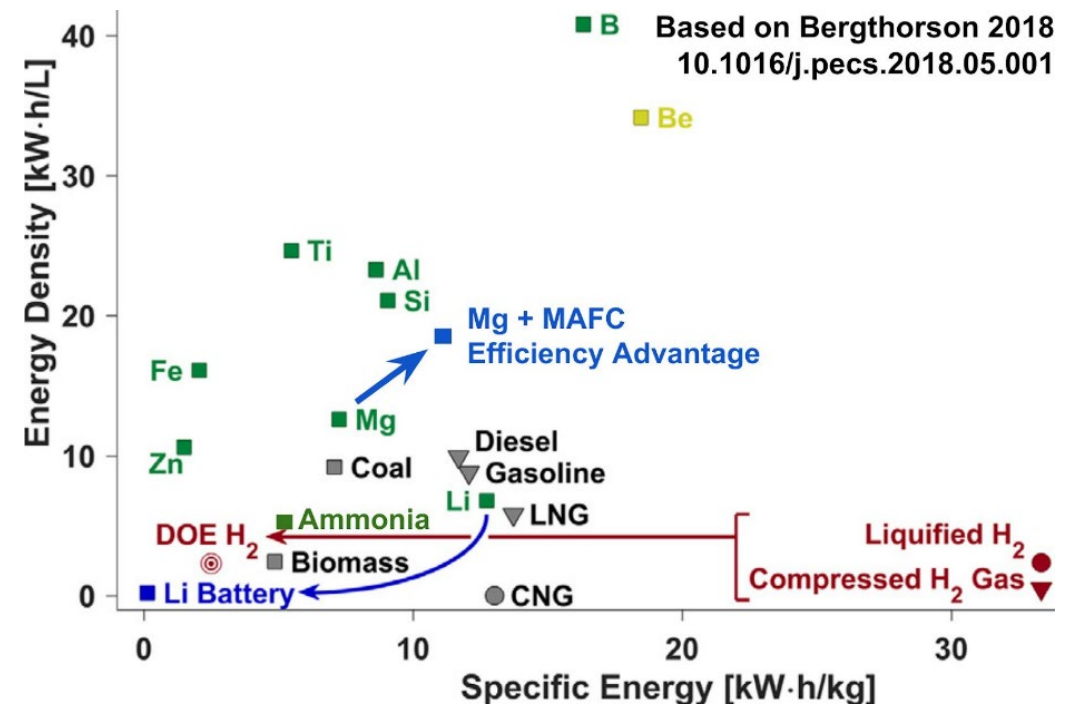


Why Magnesium?

- Energy-dense: 7 kWh/kg = 5x E/mass of Fe, higher E/volume than hydrocarbons
- Abundant: Oceans: 2 quadrillion tonnes (300 kt/human)
Co-product with seawater desal
300 kg = 1 month USA electricity
- Low toxicity: bodily nutrient, LD50 4 g/kg, MgO dissolves in lungs – unlike SiO₂, Al₂O₃
- MgO reacts with CO₂...

□ Most abundant elements in seawater:

1. Oxygen 85.84%
2. Hydrogen 10.82%
3. Chlorine 1.94%
4. Sodium 1.08%
5. **Magnesium 0.13%**
6. Sulfur 0.09%
7. Calcium 0.04%



Magnesium Metal Production

