Technical Challenges for Energy Materials
We looked into the technical challenges facing **energy materials**, focusing on both **generation** and **storage**. The conversation started by defining what we mean by energy materials, things like materials used in solar panels, batteries, fuel cells, etc. We talked about why these materials are critical to the energy transition and then divided into two groups to discuss.

Energy Generation Materials
Key challenges that came up:

- Durability issues, especially in tough environments
- Delamination problems in PEM electrolysers/fuel cells
- Recyclability, particularly for non-fluorinated materials
- Adapting materials to different climate conditions
- Choice of metals and the push for PFAS-free materials due to regulatory changes
- A need for more fundamental, early-stage research

Possible solutions:

- Reducing reliance on rare or hard-to-source materials
- Better collaboration between research and industry, making sure what's happening in labs actually helps solve real-world problems

Energy Storage Materials
Main points raised:

- Increase the surface area of materials to boost performance
- Improve energy density while keeping materials safe and stable
- Similar challenges around durability, recyclability, and material sourcing

Ideas for innovation:

- Exploring new materials and architectures (e.g., nanostructures)
- Bringing academic research and industry priorities together earlier to ensure research is solving real-world problems
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Guiding Questions We Discussed:

- How can we improve durability and lifecycle?
- What new materials or techniques are game-changers?
- How can academia and industry work together better?
- What role should policy and regulation play?

Lots of good thinking and input, especially around linking material science more directly to the energy transition.