

# Academic English: Intermediate

# Liquid metal batteries

- Read the Discussion questions.
- Watch: <https://youtu.be/Sddb0Khx0yA>
- After you watch, discuss the questions with your group.

## **Renewable energy – Discussion questions**

While you watch the video, try to answer these questions. After you watch, discuss the questions with your group. If you can't figure out the answer, ask another group to help you.

1. How does Donald Sadoway know that the electricity to power the lights shining on him was generated just moments ago?
2. If battery science is straight forward and the need for storage is compelling, then why don't we get most of our energy from batteries today? What does Professor Sadoway say engineers should try to do when they invent new batteries?
3. A battery needs to be charged with energy from a source of electricity. How can renewable energy sources work with liquid metal batteries to supply the energy that people need?
4. Professor Sadoway worked with students and graduate students to invent the liquid metal battery. Do you think you would like to work on a project like this? What might be hard about this kind of work? Why might be rewarding about this kind of work?

# Liquid metal batteries

- How does he know the electricity was just made?
  - Electricity must be used just after it is generated (demand must be in balance with supply).
- Why don't we get much electricity from batteries?
  - Powerful batteries are too expensive. Engineers need to think about price (“invent to the price point”).
- How can renewables work with batteries?
  - Solar, wind, etc. can charge batteries. Batteries can supply energy whenever people need it.

# Prepare for group projects

- Ways to prepare a speech
  - ✗ Extemporaneous – no prior preparation
  - Planned – notes about main ideas
  - ☺❤️🌟 Written – write a script
  - ✗ Memorized – write, then memorize

# Prepare for group projects

- Structure of a speech

- Introduction: Get their attention; Tell main idea

- (about 10% ~ 20% of speaking time)

“Tell them what  
you  
will tell them.”

- Body: Explain the details

- (about 60% ~ 80% of speaking time)

“Tell them.”

- Conclusion: Reminder of main idea; “Thank you”

- (about 10% ~ 20% of speaking time)

“Tell them what  
you  
told them.”

# Prepare for group projects

- Delivering a speech
  - Volume – louder than usual, but not yelling
  - Pronunciation – clear and natural, like a human
  - Eye contact – look toward the audience as much as possible
  - Pauses – Stop to breathe sometimes. Don't say, 'えっと'.

# Prepare for group projects

- If you feel nervous:
  - Everybody feels nervous giving a speech. (先生も)
  - The secret is not to *look* nervous.
  - Breathe deeply. Pause.
  - Don't move around too much.
  - Remember: We like you. We won't mind little mistakes.
  - Remember: It's not a test. Just do your best, and we'll be happy.



# Prepare for group projects

- You **DO NOT** have to use PowerPoint.
  - Many presenters rely on PowerPoint.
  - Often, their speeches are *terrible*.
  - We want to hear you speak, not to read slides

# Prepare for group projects

- If you use PowerPoint, make sure you know how.
  - Limit animation, sounds, other tricks
  - Not too much information on each slide
    - 6 x 6: Six lines, six words each
  - Practice!
  - We want to hear you speak, not to read slides