How do we characterize and control matter away - especially very far away - from equilibrium?

Progress on Grand Challenge

Using the model reaction Li + $FePO_4$, NECCES has been able to predict, see, characterize and control the matter (reaction pathway – intermediate matter) away from equilibrium for use as a battery electrode.

New Horizons for Grand Challenge

This grand challenge is critical for all reacting energy systems, which are by their very nature away from equilibrium and in some case far from equilibrium. The focus/scope of the Grand Challenge is appropriate?

Remaining Challenge

- Little is known about the impact of particle size, composition. Shown only for nano-sized particle so far. Need for all electrochemically active materials
- Yes, this should be tractable on the decadal scale, and works with the Materials genome.

Refreshed Grand Challenge?

- A new statement of the Grand Challenge is not needed?
- There is much needed to be done, and as the Materials Genome stated this will take 10 years, so this Grand Challenge should not be retired.