

Materials Breakout Highlights

- ▶ Problems with components for balance of plant and seals are less difficult at intermediate temperature, so breakout focused on electrolytes and electrodes
- ▶ Electrolyte
 - Proton and oxygen conductors in the same system
 - Minimum conductivity needed with acceptable polarization is on the order of 0.1 S/cm
 - Molten salt may be a class of materials of interest
 - Trade space between liquid, semi-solid, and solid electrolytes for stability and performance
 - Strain effects to improve conductivity
- ▶ Electrode
 - Reforming on electrode: potentiostatic modulation or photo-assist
 - Thermoelectric in the electrode to increase electrochemical potential, leveraging thermal gradient across electrode
 - High selectivity catalysts are enabling
 - Single chamber fuel cell
 - Facilitate carbon formation for improved electronic conductivity without blocking transport