2. Diffusion and surface kinetics study of BCFZY0.1

Flat profile
- Vary at 300, 400, 500 and 700 °C
- Increase in 0.21 atm and 0.3*10⁻⁵ atm obtained at 300, 400, 500 and 700 °C
- Porous surface

Surface exchange coefficient (k*) and activation energy (E_a) for k*
- k* = 2*10¹⁵ cm/s at 300 °C and 1.4*10¹⁵ cm/s at 700 °C
- E_a = 76 kJ/mol (Assumption: Temperature independent)
- b) High diffusion coefficient
- a) High surface kinetics limited

Sample modification – Increase surface reaction
- a) Improved diffusion coefficient
- b) Adhesion between the paste and the pellet

3. Thermodynamic study of BZY20 and BCZYYb

Defect Chemistry
- b) Low pO₂ – Hydrogen atmosphere
- b) Not sure the accuracy of the measurement due to the porous surface

Challenges at lower temperature and pO₂
- a) Lower temperature – really slow TG analysis
- b) Lower pO₂ – Hydrogen atmosphere

TGA of BCZYYb at lower temperature
- a) Slow ramp TG measurement leads an efficient way to do analysis
- b) Window between 0.21 atm and 0.3*10⁻⁵ atm obtained at lower temperature
- c) Will be helpful to get thermodynamics properties

Next step
- a) Get thermodynamics properties by fitting curve
- b) TGA at lower pO₂ and wet atmosphere

4. Conclusions
1. Identified k* and E_a for k* of BCFZY0.1 and modified the sample by increasing surface area to get D*
2. Higher temperature TGA has been done for BZY20 and BCZYYb
3. Further TG analysis at lower temperature (200-300 °C) is required to understand thermodynamics properties

5. References

6. Acknowledgement and contact

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*E-mail of the Corresponding Author: shin@mines.edu