MSE-4: *Photoluminescent and Electroluminescent Perovskite Films*

Hao Jing, Robert Theisen

Problem Statement:

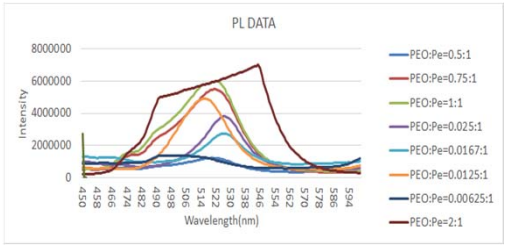
How to make better electroluminescent and more consistent film than the current technologies on the market?

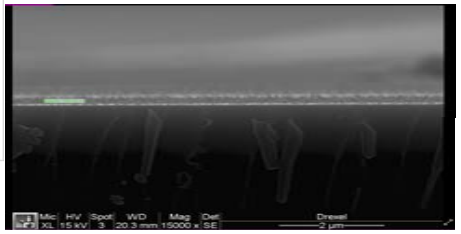
Approach:

Correlated structure & electrochemical performance with fabrication method:

- Fabricated various films through drawdown, spin coating and with different ratios.
- Characterized all samples *via* Fluorometry and SEM.
- Compared photo- and electro-luminescent results of all methods.

Results:





- Fluorometer – tested photoluminescence of all samples.
- SEM – showed different morphologies of each fabrication method.

Discussion & Conclusions:

- PEO:Perovskite ratio had an impact on the intensity of the film.
  - Brightest ratio - 2:1 PEO:Perovskite.
  - 7M au intensity; too high for current instrumentation.
- More layers increased the brightness of the film.
- The brightness decreased with respect to time:
  - Related to PEO coverage; up to 75 % at low PEO.
- Issues with 3D film consistency; impaired EL testing.

Contact: Dr. Wei-Heng Shih
Professor,
Materials Science & Engineering
E-mail: shihwh@drexel.edu
Phone: 215-895-6636