

UMBC ENCH 615: Materials for Chemical Eng.

Spring 2021

Writing a Paper about a Materials Discovery and the Person or People Key to That Discovery

MOTIVATION

I love Dr. Ramirez's The Alchemy of Us. I love that she describes the materials issues incredibly clearly (she has a PhD in Materials Science) but also ties them to the people at the heart of the development as well as those impacted by materials.

So many of the great scientists along the way have been from marginalized groups, but they have often been written out of the story of science. I want to write them back in both because they matter, and also because learning about their work can make it easier to understand the materials and the challenges in development.

STRUCTURE

The goal of this paper is to describe a material or process that was developed to solve a challenge and the scientist(s) who developed the material. Spend at least 1000 words on the material and 500 words on the scientist.

Key points:

- Describe the material, application challenges
- Describe the scientist, the challenges they faced, how they addressed them
- Address what the impact of the work is.
- Figures are encouraged
- Everything needs to be properly referenced. I highly encourage you to use Zotero or other referencing software to make your life easier as you put these together.

As an example, you might be interested in solar cells. You might, in particular, be interested in the development of novel light sensitive molecules for solar cells. You'd want to describe how solar cells work, how the particularly light sensitive molecules work, what their current challenges are, and how a scientist is addressing those challenges. A very quick google with the following search terms: solar cell organic molecule stability scientist leads to the following:

<https://pubs.acs.org/doi/10.1021/acsenergylett.0c00083>

The ACS and other organizations are starting to try and draw more attention to scientists from marginalized and underrepresented groups.

I highly encourage you to start early and please feel free to ask for feedback ahead of time. Every other class is optional, and it's a good use of part of that time to ask questions about topics and people.

ASSESSMENT

The material is clearly explained with the structure and properties (20%)

The background/history of material is addressed to give context (10%)

The challenge related to the material is presented clearly (10%)

How the solution addresses the challenge is laid out clearly (10%)

The impact of the material is clearly presented (10%)

Who the scientist(s) was/were is clearly presented (10%)

The challenges they encountered are clearly presented (10%)

How they addressed the challenges both in their lives and at the bench are clearly laid out (20%)

PRESENTATION

You will present the story of the person and material for one of the two papers you write. 10 minutes, 10 slides total.