

MACRO Report. Spring 2021

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Overview

We are developing a platform that supports 3 distinct areas. Curriculum, Professional Development, Outreach.

We also post scientific resources available to researchers

Key activities:

Website: The MACRO website is launched and live. We received 4839 views and 2834 visitors in 2021. This is up from 1926 and 742 views and visitors in 2020. This shows that our website is reaching people.

<https://macro-poly-pmse.org/>

The website provides resources on all 3 areas. New content has been added to the website. See below. Additionally live events are being organized as part of MACRO.

Curriculum. We now have resources on the MACRO webpage on general polymer topics, acyl substitution, stereochemistry, alkene chemistry.

Recent activities

-Updated introductory materials. Since MACRO changed the slide template from blue to teal, we went through and redid the videos. Now, we have the set of introductory slides (no audio, both PowerPoint and PDF), the instructor support document, and five videos made from the slides ready to upload to the YouTube channel.

-All of the synthesis modules have no-audio PowerPoint slides, PDF slides, and a complete instructor document. I do think the stereochemistry instructor doc could use another look before we put it out there, though.

-The characterization modules for FTIR and SEC have no-audio PowerPoint slides, PDF slides, and complete instructor document.

We also started to make videos of polymer materials and applications to share with the community as a whole. These will be accessible short videos.

Professional development (PD). The goal of MACRO's PD activities are to provide resources (currently) and eventually materials to people interested in polymer science at various stages of their career. We have published resources on the MACRO website for undergraduates seeking further graduate study in polymers. We plan to expand these resources over the next 3-5 year to address all stages of career development including graduate students, industry and academics.

Recent publications through the website.

A career in industry or academia (with Mahdura Pade)

<https://macro-poly-pmse.org/professional-development/a-career-in-industry-or-academia/>

CVs vs Resumes (with Andrea Armani)

<https://macro-poly-pmse.org/professional-development/crafting-a-well-structured-cv-or-resume/>

We also updated and substantially overhauled

Tips for writing a paper:

<https://macro-poly-pmse.org/professional-development/tips-for-writing-a-paper/>

We also held a live REU and Grad School Live Panel on Nov. 5 2021. Dominik Konkolewicz and Bhavya Singhi comoderated We had over 20 students and 5 panelists (Michaela Stefan (Grad School/Academic), Leilah Petit[REU], Valerie Carmichael [Grad School], Jafer Vakil [Grad Student], Lou Charkoudian [REU and Managing Grad School]) through Zoom. This type of live interactive web panel/webinar format is where MACRO envisages significant effort

Outreach. We have created a depository of outreach materials for individuals to be able to spread their passion and knowledge of science to the general population. MACRO just launched an interface where individuals can share what they are currently utilizing in their communities and receive appropriate recognition for their contributions to the Polymer community.

Added recently added outreach resources

Slime with Jello

Bouncyballs with borax

Sillyputty with cornstarch/glue

Bring your own Pumpkin

Scientific Resources

We have also added scientific resources that researchers can access and use to facilitate their own polymer analyses. Recently added resources are

Peak deconvolution for GPC data

<https://macro-poly-pmse.org/scientific-resources/peak-deconvolution/>

DSC Tg calculation package

<https://macro-poly-pmse.org/scientific-resources/dsc-analysis-calculator/>

GPC Mark Houwink corrections

<https://macro-poly-pmse.org/scientific-resources/thf-sec-mark-houwink-sakurada-correction/>

Planned Activities for Upcoming Year.

Curriculum- New lecture content is planned for the next 12 months.

Immediate next steps:

-Prepare videos from the synthesis slides.

-Complete the NMR and DSC modules. We are on track for the DSC portion, but we could still use NMR spectra as the one I currently have access to is not doing well in terms of functionality (quite old, needs replacing badly). We are looking for examples of using NMR for end-group analysis, copolymer composition, and determining tacticity.

Longer-term next steps:

-Branching out into physical chemistry modules with Yoan Simon and Dan Savin.

-Synthesis modules for living polymerizations.

Professional Development- We will aim to develop content for early career researchers. Likely first contribution will be on networking and how ACS can be a part of it, especially outside the national meetings.

Will host a second live panel for Graduate Students. Focus of discussion will be planning for a future career in either industry or academia.

Outreach- Engage committee members to develop clear descriptions of new outreach activities. We plan to expand the repository of listed polymer and general scientific demonstrations.