

A Great Scientific Presentation

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THE UNIVERSITY OF
TOLEDO
1872

Thank you to Colin Wolden,
John Persichetti, and NSF
REU grant 2011-2014

Outline

Introduction

Why you should care about me talking to you?

I'm going to save some global grand challenge

Methods

Plots / Tables / Animation

The Good, the Bad, the Ugly

Results

Project 1

Project 2

Conclusions

Acknowledgments

35 words

Outline

Preparation

Who is the audience? What is the purpose?

Organization / Templates

Graphics

Plots / Tables / Animation

Good, Bad, Ugly

25 words

Delivery

Voice / Hands / Eyes

Lighting / Lasers / Timing

Keys to a great presentation



Preparation



Visuals



Delivery



8 words

Know your audience



Boss

Specialists

General Scientific

General Public



Know the room



Conference room or auditorium

10, 100, 1000 people



Do I need a microphone?

How long is the talk?



Highlights: 2 – 3 slides

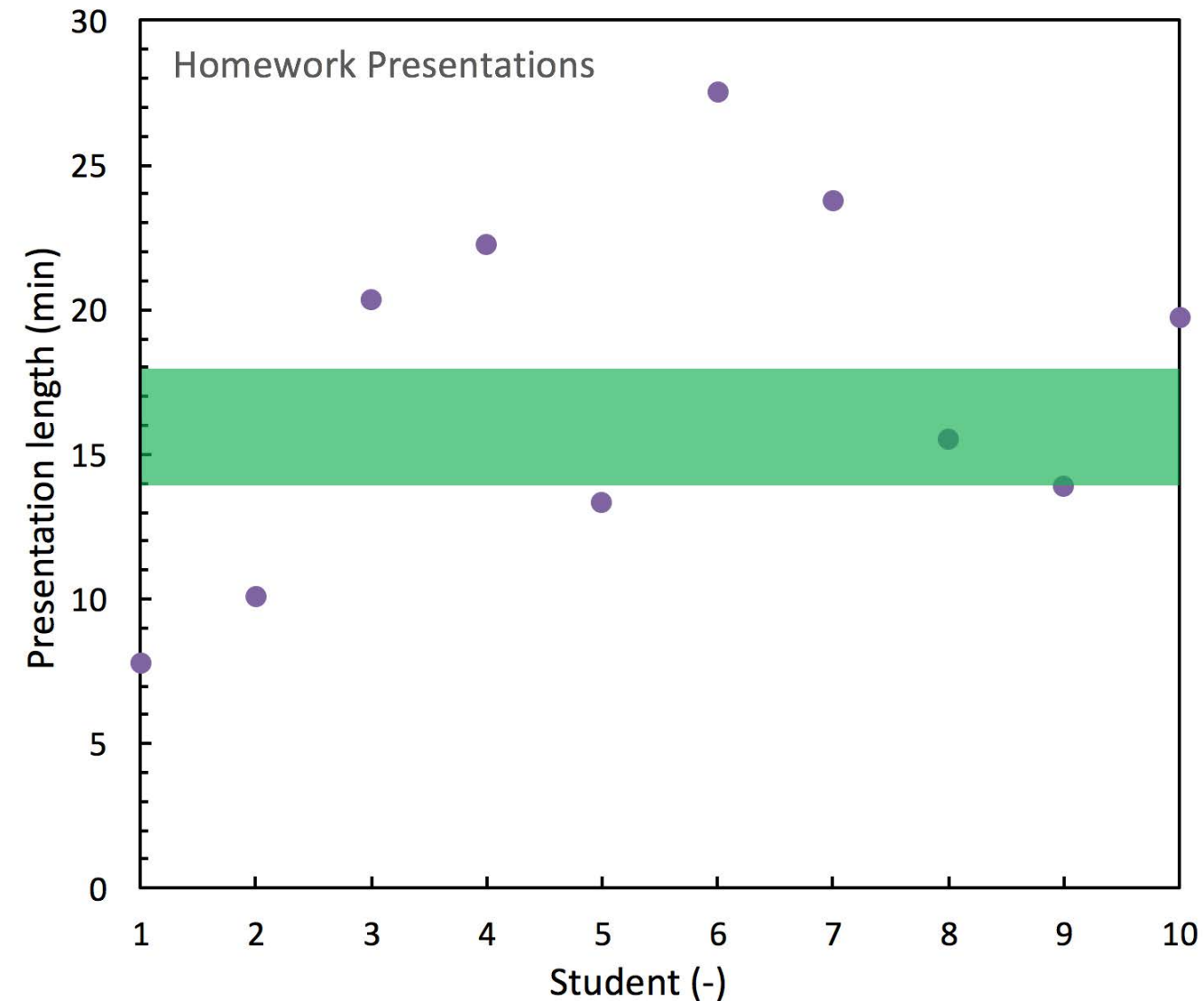
Class presentation: 10 – 15 minutes

Conference Talk: 15 – 25 minutes

Invited Lecture/Seminar: 45 – 60 minutes

slides x (0.5 - 1) = Total Minutes

Timing is everything



Rubric criteria included 14 to 18 minutes in length

Establish your goal



Sell, Educate, Impress?



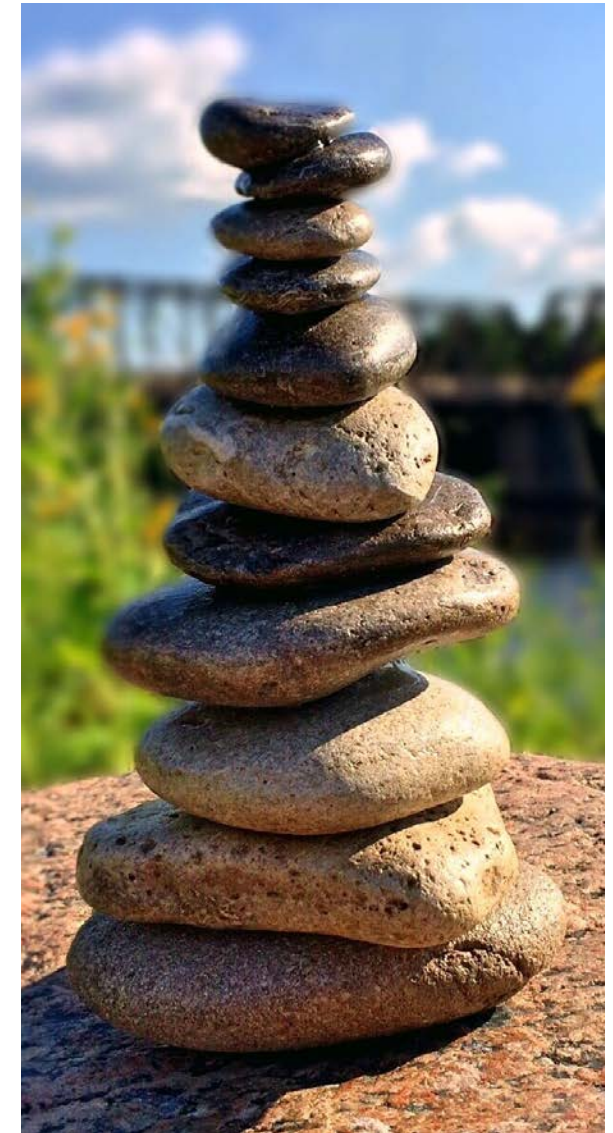
Points of emphasis



Take home message(s)

Details for the time and audience

Tell them what you told them

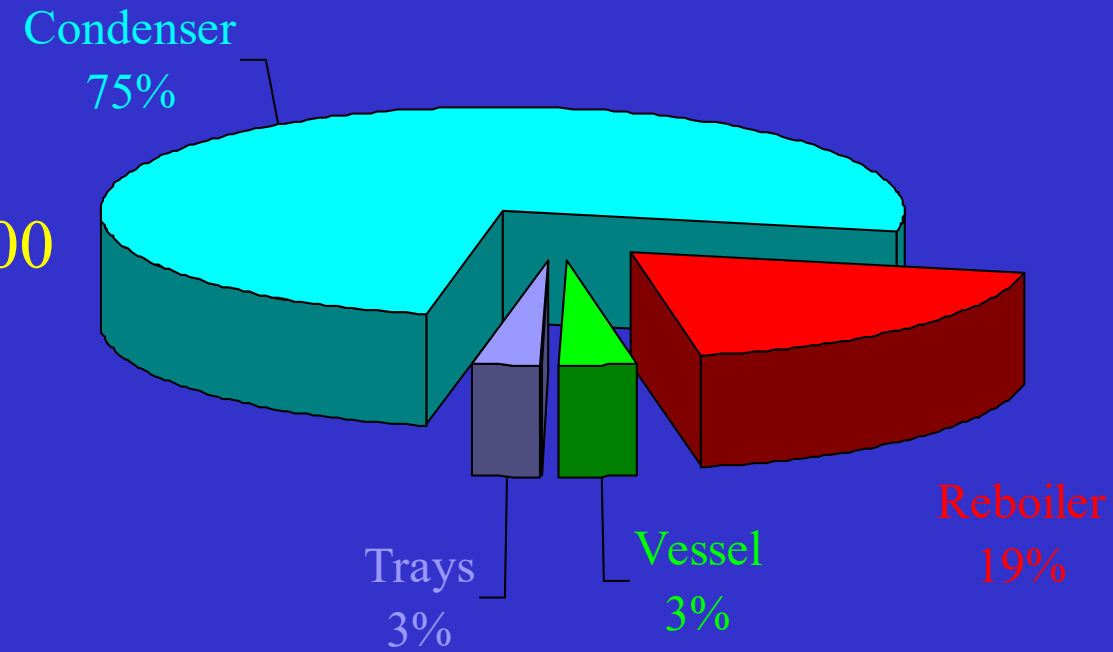


Should conclusion go at the beginning?

Distillation Column D1

Total Installed Cost = \$566,400

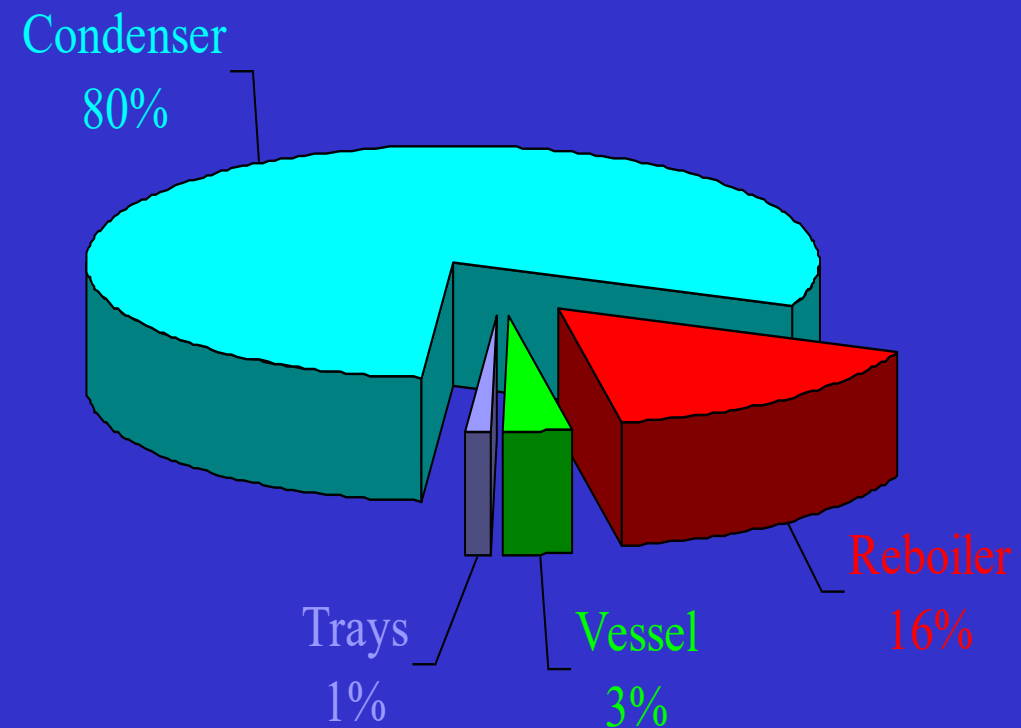
Total Utilities: CW 252,600
(\$ per year) Steam 253,800



Distillation Column D2

Total Installed Cost = \$230,700

Total Utilities: CW 54,436
(\$ per year) Steam 77,634



Slide construction big picture



My preferences:

White background + **pop** of color

Font/color/symbols: simplicity & consistency

1 graphic element = focus the eyes

Support 'bullet' points

Disclaimer: More subjective than most topics

Slide construction basics

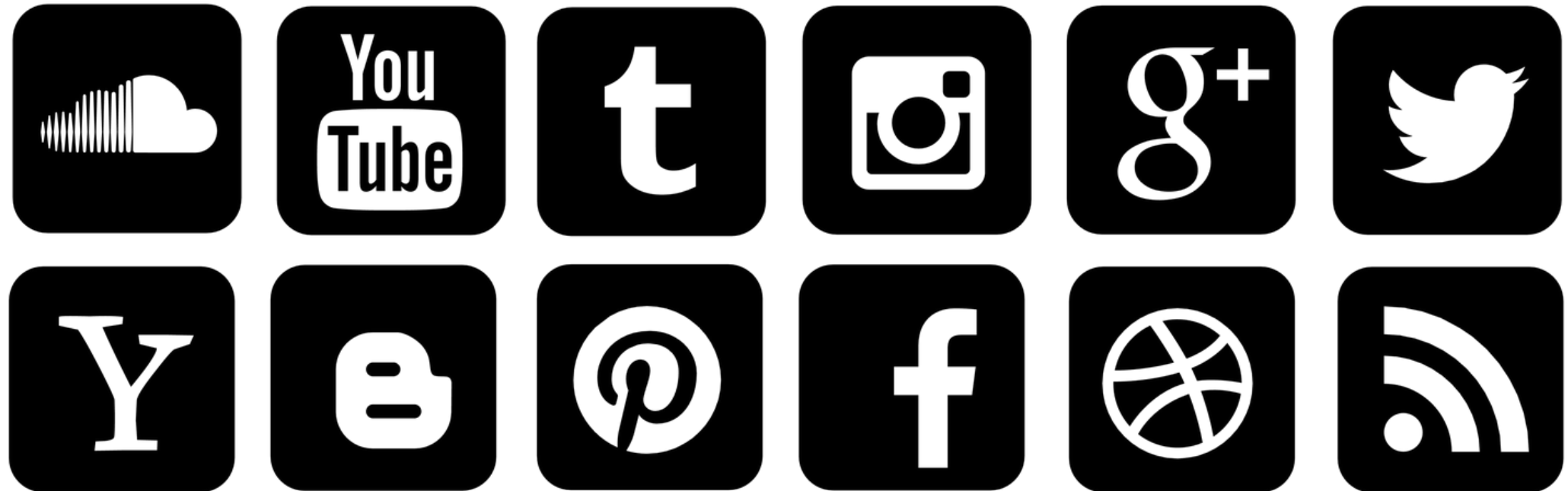


Formatting = Branding

Industry standard

Header/Footer

Logos



Simple fonts



Good = clean, sans serif

Arial, Calibri, Droid sans

Bad = serif

Times New Roman, Cambria

Bullets are for...



Avoid bullet symbols

But if you insist

- Better

- Worse 

Easiest way to limit wordiness

Slide structure



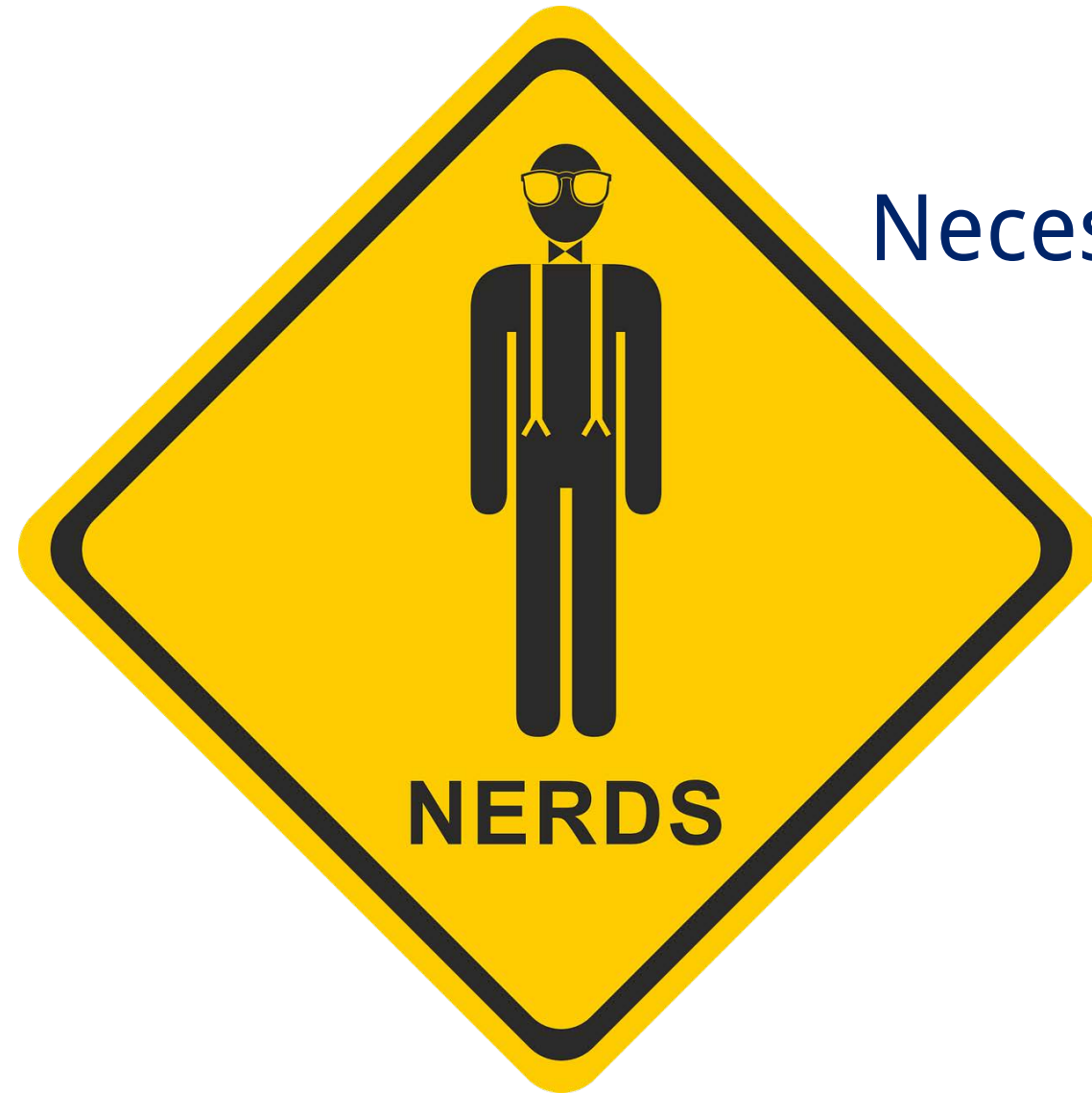
Consistency is Key

Do NOT mix fonts/**sizes**/**colors**

Spell check!

Try not to make bulleted statements go longer than 1 line because it looks dumb

Title is THE main point



Necessary details

Optional take home point - callout

Graphics



Appropriate

Not distracting

Not part of slide background



Picking the right visual



1. Figures

Critical for communicating data

2. Tables

NEVER USE TABLES

3. Animations & Movies

Great tool...but can also be disastrous

Use judiciously

I have so much great data in this table



	A	B	C	Low T (°C)	High T (°C)	T range
Toluene	7.13620	1457.29	231.827	-94.97	318.64	413.61
Toluene						
Water	7.13620	1457.29	231.827	-94.97	318.64	413.61
Water	8.05573	1723.64	233.076	0.01	373.98	373.97
m-Xylene	8.05573	1723.64	233.076	0.01	373.98	373.97
m-Xylene	7.18115	1573.02	226.671	-47.85	343.9	391.75
o-Xylene	7.18115	1573.02	226.671	-47.85	343.9	391.75
o-Xylene	7.14914	1566.59	222.596	-25.17	357.22	382.39
p-Xylene	7.14914	1566.59	222.596	-25.17	357.22	382.39
p-Xylene	7.15471	1553.95	225.230	13.26	343.11	329.85

Somewhat better table



Component	A	B	C	Low T (°C)	High T (°C)
Toluene	7.13620	1457.29	231.827	-94.97	318.64
Water	8.05573	1723.64	233.076	0.01	373.98
m-Xylene	7.18115	1573.02	226.671	-47.85	343.9
o-Xylene	7.14914	1566.59	222.596	-25.17	357.22
p-Xylene	7.15471	1553.95	225.230	13.26	343.11

Still better, but ...

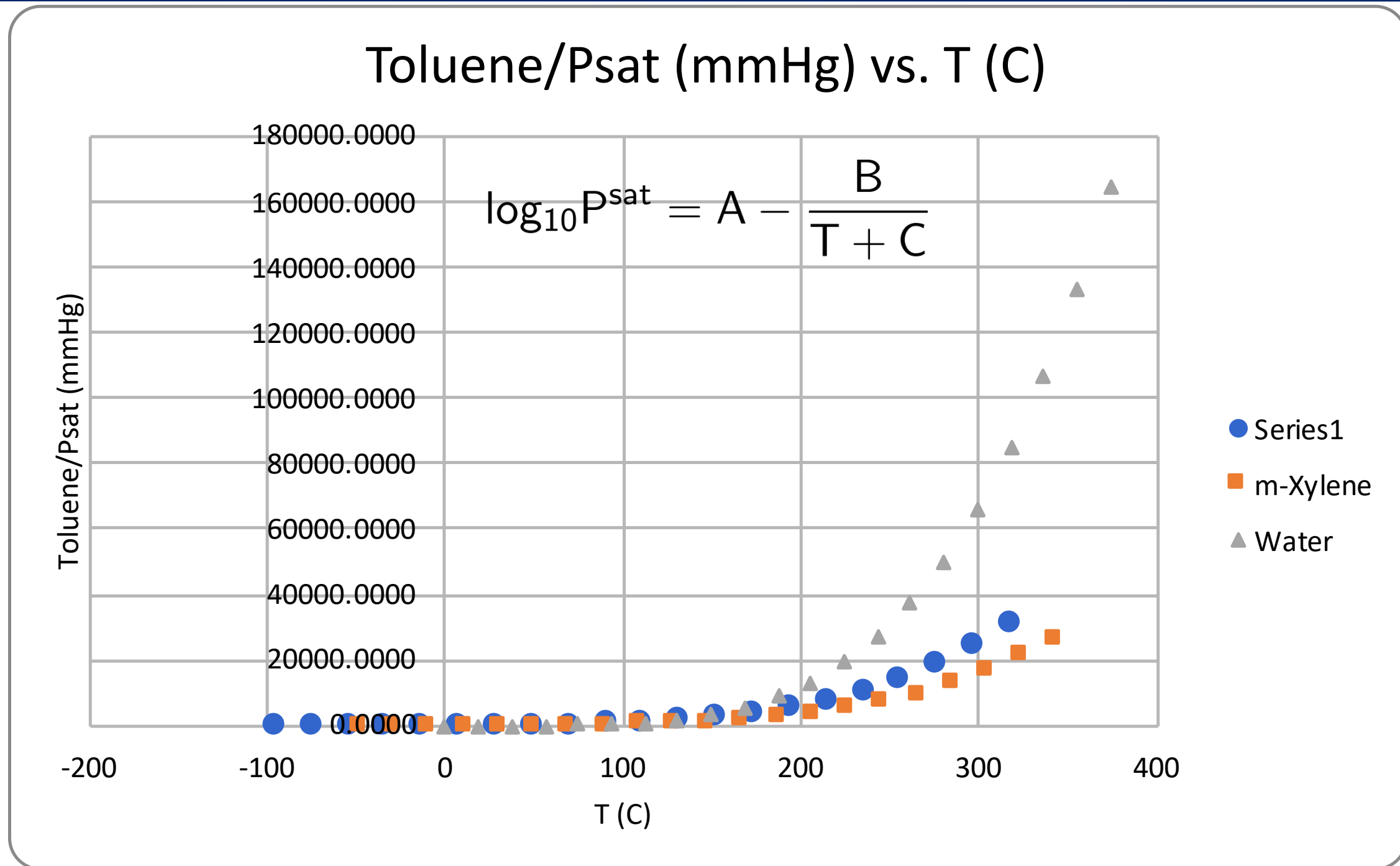


Component	A	B	C	Low T (°C)	High T (°C)
Toluene	7.14	1457	232	-95	319
Water	8.06	1724	233	0	374
m-Xylene	7.18	1573	227	-48	344
o-Xylene	7.15	1567	223	-25	357
p-Xylene	7.15	1554	225	13	343

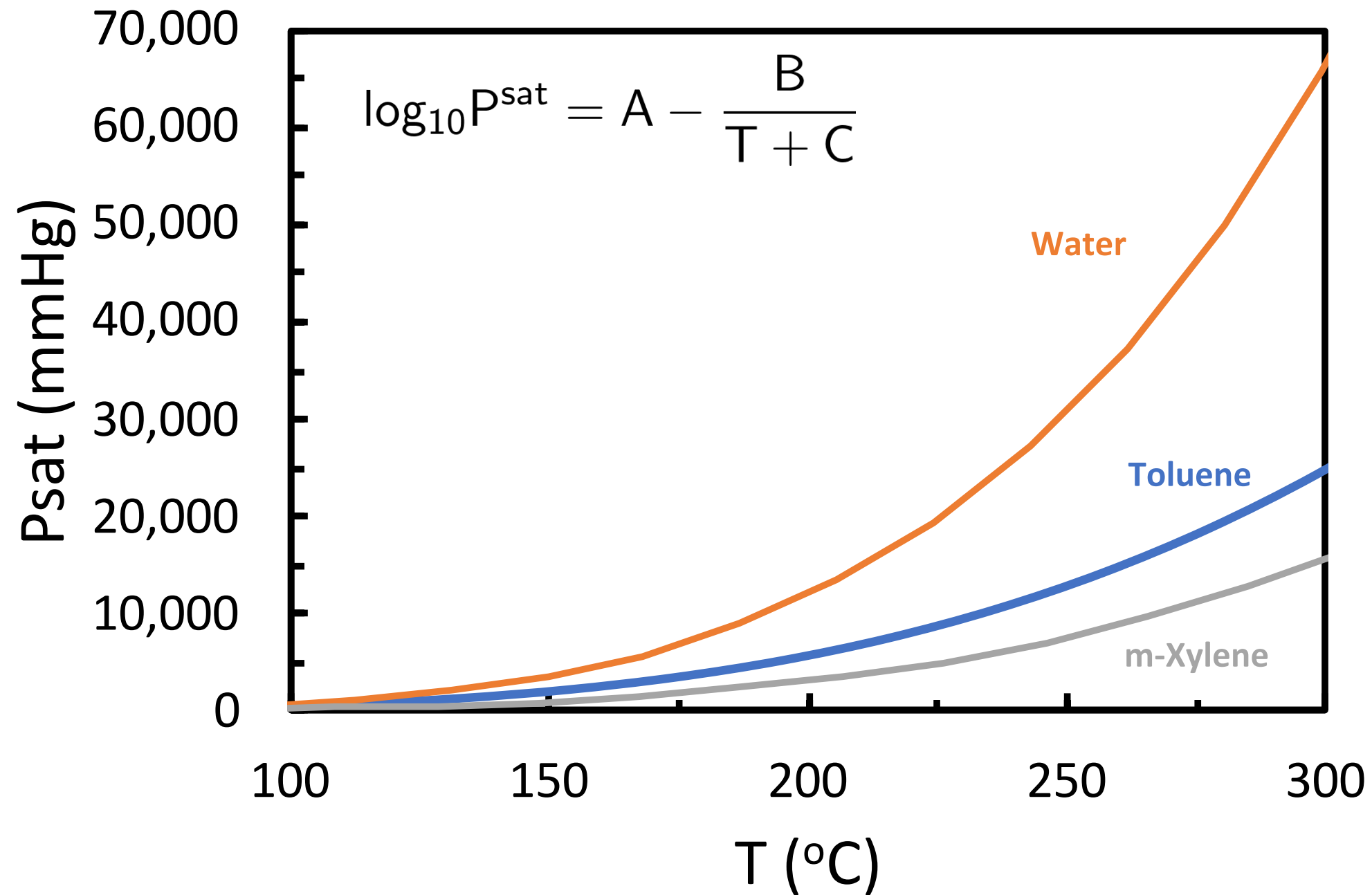
$$\log_{10} P^{\text{sat}} = A - \frac{B}{T + C}$$

Avoid tables if at all possible

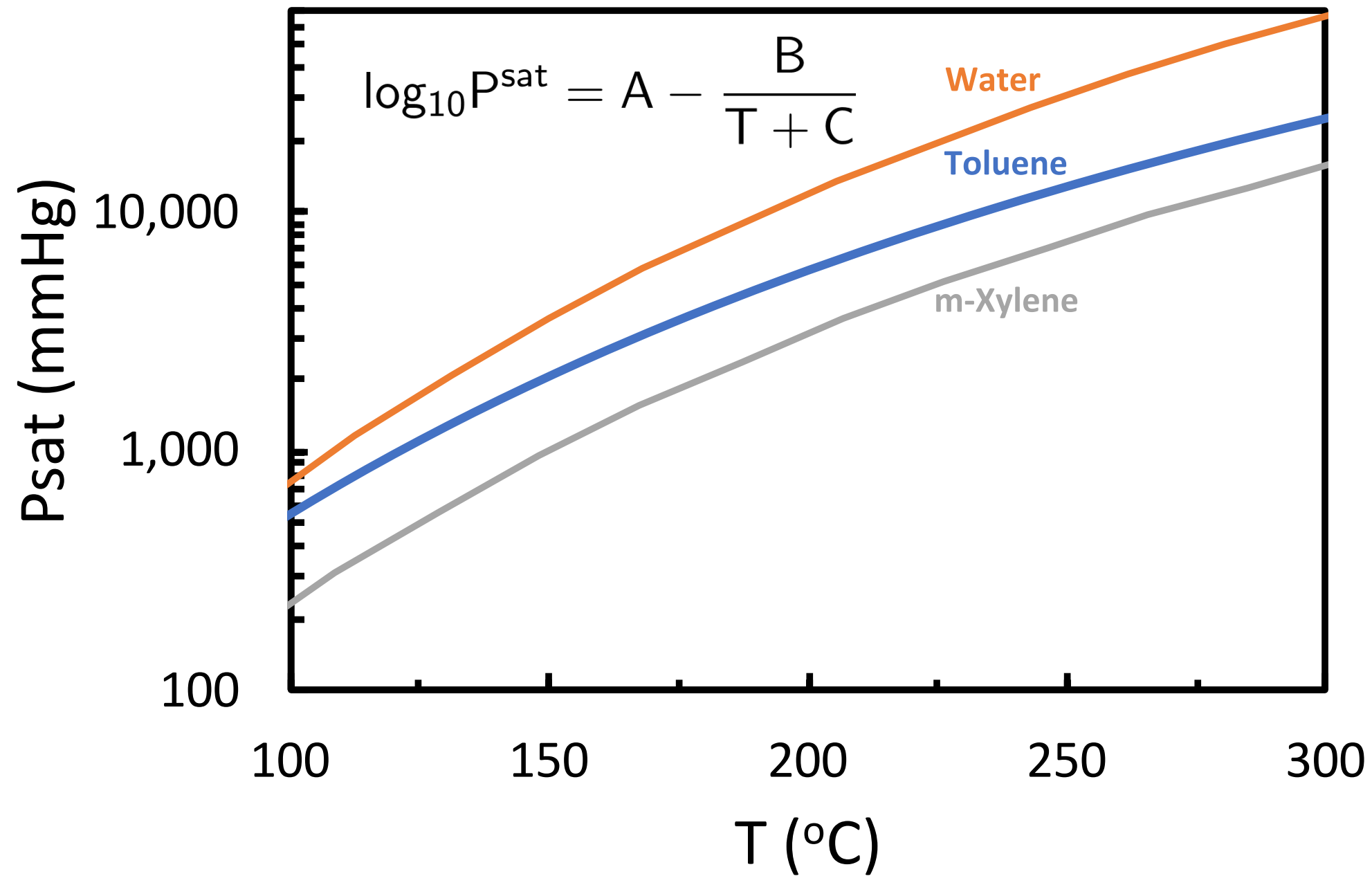
Charts using default settings = lazy



Graphs >>> Tables



Rheologists love log scale



One figure, one format



Figures in journals rarely translate to presentations

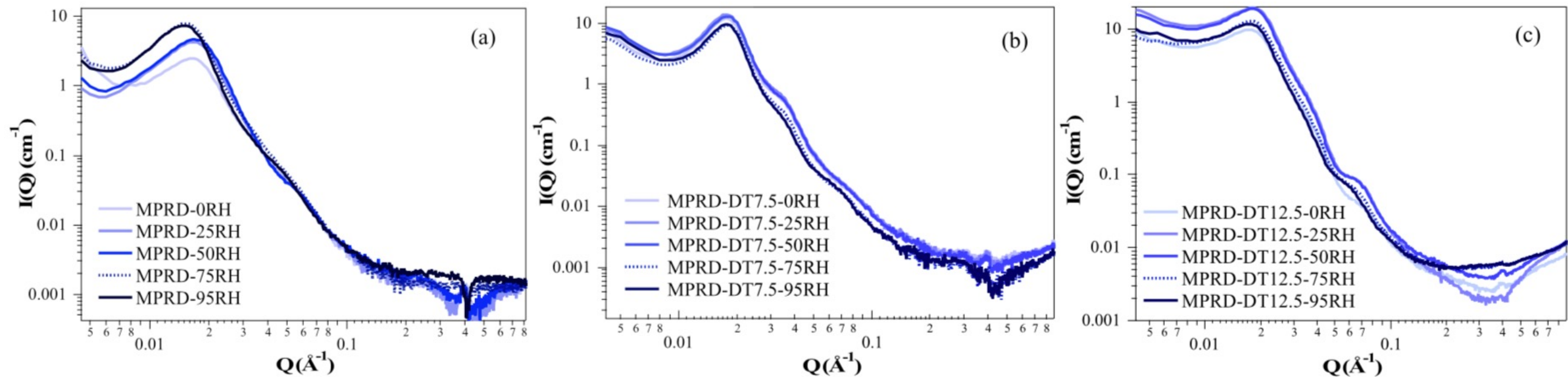


Fig. 11. SAXS patterns of $(\text{PCMS})_{60}\text{-(PCOE)}_{288}\text{-(PCMS)}_{60}$ functionalized with MPRD and not cross-linked (a), and with 7.5 mol% DT (b) and 12.5 mol% DT (c) crosslinks as a function of relative humidity.

Figures basics



Do

Close plot box

Inside tick marks

Use color for contrast

Do not

Use gridlines

Too many ticks, sets of data, numbers

Figures guidelines



Axes, Labeling

Use largest fonts possible, can be bold

Direct Labeling > Legend Box

Points vs. Lines

Data: Use unconnected points

Exception: spectra

Include error bars when possible

Lines: Indicate Model or Fit

Color is usually good to distinguish

Avoid yellow

Delivery Skills



Practice!!!

Know your slides

Timing + Pauses + Transitions

Do NOT block/blind audience



Be yourself, humor can work great

Verbalize your story



Demonstrates a strong, positive feeling

Project a clear voice with correct pronunciation

Let all audience members hear you

Minimize stall words (um, uh)



Present your story



Look "at" your audience

Minimize reading notes

Do NOT face or read slides

Relax and be confident

Movements can help the audience visualize



Keys to a great presentation



Preparation



Visuals



Delivery



Preparing a great presentation



- Establish goals
- Know the room
- Organize your story



Seeing a great presentation



- Slide quality & consistency
- Great slide is self-explanatory
- Simple mix of graphics & words



Giving a great presentation



Practice

Practice

Practice



Acknowledgments



Thank supporters (people + funding)

Thank collaborators, co-workers (but not co-authors)

Thank the audience for paying attention

Invite Questions

Other things



Aspect ratio - Old (4:3) vs HD (16:9)

VGA vs HDMI (adapters)

Laser vs. pointer

Copyright/royalty free images – Pixabay.com

Other sources



<http://designtaxi.com/news/370150/Tips-On-How-To-Create-Great-Visual-Presentations/>

<http://www.briantracy.com/blog/business-success/16-powerpoint-presentation-tips-examples/>

<https://www.linkedin.com/pulse/16-tips-awesome-powerpoint-presentation-brian-tracy>

<http://www.slideshare.net/deckworks/8-tips-to-create-epic-visual-presentations>

<https://www.slideshare.net/Amanda627/examples-of-good-and-bad-slides>

<http://blog.hubspot.com/blog/tabid/6307/bid/34274/7-Lessons-From-the-World-s-Most-Captivating-Presenters-SlideShare.aspx#sm.000e7od9s19krdp8zln2et64eumym>

<https://www.powtoon.com/presentation/5-best-presentations/>

<http://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.0030077>

http://sholl.chbe.gatech.edu/david_sholl.html

<http://physicstoday.org/jobs/webinar-outstanding-oral-presentations>

Slides and rubrics available



<http://www.utoledo.edu/engineering/chemical-engineering/liberatore/engineeringeducation.html>



Text your questions or raise hand

Keys to a great presentation



Preparation



Visuals



Delivery

