

Effective Posters— *Presenting your Results Clearly and Persuasively*



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First, consider your objectives in presenting a poster

**Tell an interesting, persuasive story of your
work**

**Get immediate feedback from other
researchers—questions, suggestions,
criticism**

Get noticed

Talk to other scientists about related work

Meet prospective collaborators, “network”

Presenting your results in a poster instead of a paper has advantages

Personal interaction
Immediate feedback
More questions

No time limits
More relaxed



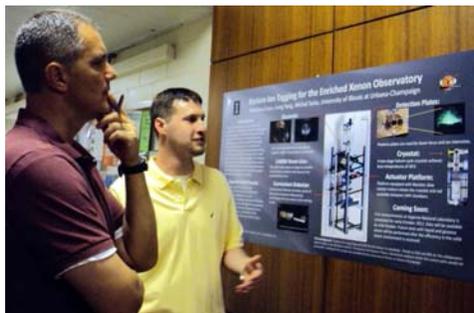
Tip: While both communicate results, a poster is *NOT* just a paper stuck on the wall

Your poster must be tailored to your audience to be effective

Who is your audience?

What do they want to know?

What will capture their interest?



PHYS 499 Posters, October 2012; (l) Kevin Pitts, (r) undergraduate Matthew Coon

An effective poster must

Attract and engage the audience—

- prominent title
- visually interesting figures (lots)
- clean, uncluttered appearance

Highlight key points so they are *immediately* recognizable

Be arranged logically so a viewer quickly understands the “story”

Contain all elements of a good research paper—motivation, methods, results, discussion, conclusions, acknowledgments

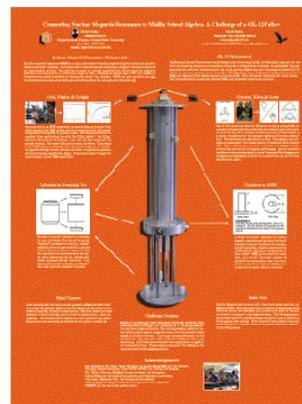
Make your topic “jump off the wall”

Make the title informative, descriptive, and concise (one line)

Use at least one eye-catching graphic

Use color effectively

Use humor?



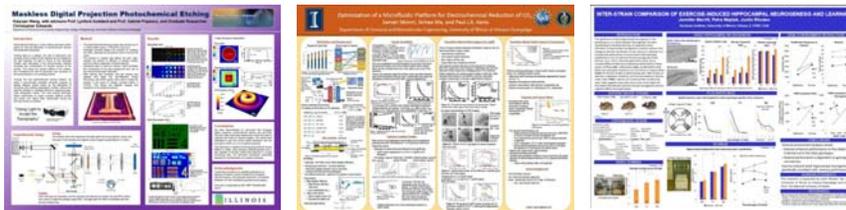
Tip: Your audience will not approach you if your topic is not clear from a “safe” distance (3 m)

Distill your message

Don't try to tell the "whole story"

Present only enough data to

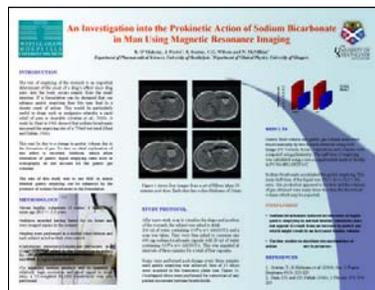
- support your conclusions and
- show the originality of your work



Every poster must have a "headline" (title) and a "byline" (authors)

Title—
in 120-pt font
<10 words

Your name and
affiliation—
in 80-pt font



Ask your adviser NOW about co-authors

Better title?

Prokinetic Action of NaHCO₃ in Humans Using MRI

Tip: If it's important, make it **BIG**

Include an “abstract” only if your poster is going to be unattended for lengthy periods*

If you’re standing there explaining the work, nobody’s going to read it anyway

Use the space for something more compelling and visually interesting

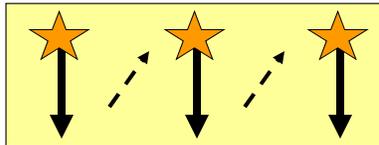
If you *must* include an abstract, keep it very brief (<50 words)

***or if your adviser tells you to...**

Most viewers will start at the upper left corner of the poster and read down and across

Break up your “story” into columns (think “newspaper”)

Put important points at the top of each column



Tip: Keep lines of text <20 words long. People’s eyes don’t easily track strings of text longer than that, even at 30 pt

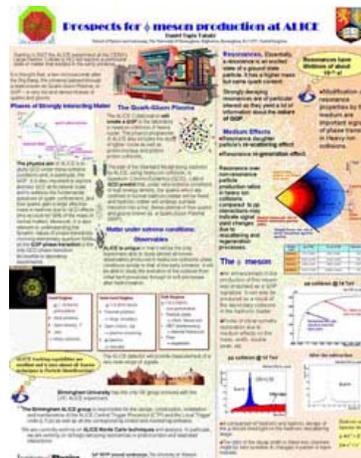
If your poster is laid out in landscape orientation, use columns, not rows, to organize the information



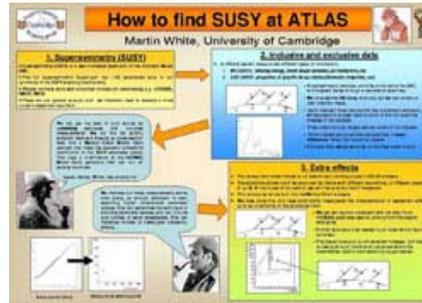
from http://www.soe.uoguelph.ca/webfiles/agalvez/poster/poster_making/entry.htm

The viewer may not be able to fight his way back to the left side to look at the lower rows of your poster; he'll probably just quietly move on to the next poster

How is the viewer going to navigate through this poster?



If navigation is not *immediately* obvious, number the elements or use arrows to guide the viewer through the poster.



This poster uses arrows to guide a viewer through a complex story

Impact of Folivory on Red Fluorescence Emission
 Shahzeen Attari, University of Illinois at Urbana-Champaign

Fluorescence Lifetime Imaging Microscopy (FLIM)

In this experiment we excited with 488 nm laser light and looked at the Chlorophyll a fluorescence in the red. The images from FLIM with fluorescence intensity are overlaid by phase lifetimes.

Fluorescence Intensity
 Fluorescence, photochemistry and heat transfer occur in competition, such that increase in efficiency of one will result in a decrease in yield of another. Chlorophyll (Chl) a fluorescence is red and bright. It is a key component in photosystem II (PSII) autoexcitation.

Results from fluorescent imaging
 The three pairs of control and damaged leaflets are shown only for the damaged leaflet. The false coloring in this image corresponds to electron transport (photosynthesis).
 Red = 0.55 Yellow = 0.35
 Blue = 0.15 Black = 0
 Impact of folivory on photosynthesis is greater than the amount of its hole!

Future Plans
 Verifying Chlorophyll a fluorescence intensity and lifetime response to crawling and folivory. Repeating the experiment at different frequencies to extract more information about the lifetimes.

Acknowledgments: Thanks to Glen Rufford, Professor Robert Clegg, Professor Gowindu, Professor May Baranbaum and Bridget O'Neill.

Tip: Don't make the viewer guess the sequence

**Remember
that people
will be looking
at your poster
while standing,
not sitting**



**Tip: Don't put important points
in tiny print at the bottom**

**The center of the poster should
feature the methods and results**

**Problem statement, motivation,
objectives**

Methods

Results

Applications or future work

Sources of additional information

Acknowledgments

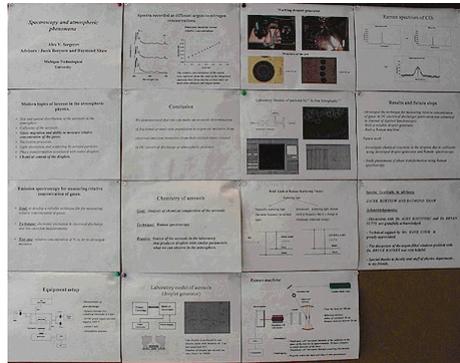
**Tip: Visually represent the relative
importance of text elements**

Position your important points strategically

At eye level

At the top of columns

In the center



From 3 m away, how does the viewer know what is important?

Tip: People look at color first

Here's a good example of strategic positioning

Production of Δ Particles from Σ^* Decays at HERMES
 Cynthia Chiang, University of Illinois at Urbana-Champaign

Background

- Examine spin transfer through fragmentation process
- Study spin structure of Δ particles produced in deep-inelastic scattering (DIS) events

The HERMES experiment

- Major physics experiment for studying spin structure of particles
- Located at the Deutscher Elektronen Synchrotron (DESY) in Hamburg, Germany
- Longitudinally polarized 27.5 GeV positron beam
- Gas target (polarized Fe, various heavier experimental gases)

The problem

SIGMA CONTAMINATION!

The hunt for Σ^*

Results

Future plans

- Develop and refine Monte Carlo simulations
- Contribution to system 2, but also from 2: develop code for identifying candidates in the data
- Find fraction of Δ particle production in Σ^* decay products
- After 2, 2 contribution is determined, it will be possible to correctly interpret experimental data

Courtesy H. Chiang

Tip: Position important information above the midline and in the center

Use the visual elements of the poster to tell the story

Emphasize main points

Illustrate apparatus,
methods, and results



Summarize numerical data to show trends
or reveal relationships

Use printed handouts to:

Convey complicated information

Provide additional details

Give your contact information

Tip: Keep all text (total) to <600 words

At least half your “story” should be told in pictures

No graphic should be smaller than
5 in × 7 in (13 cm × 15 cm), and most
should be larger

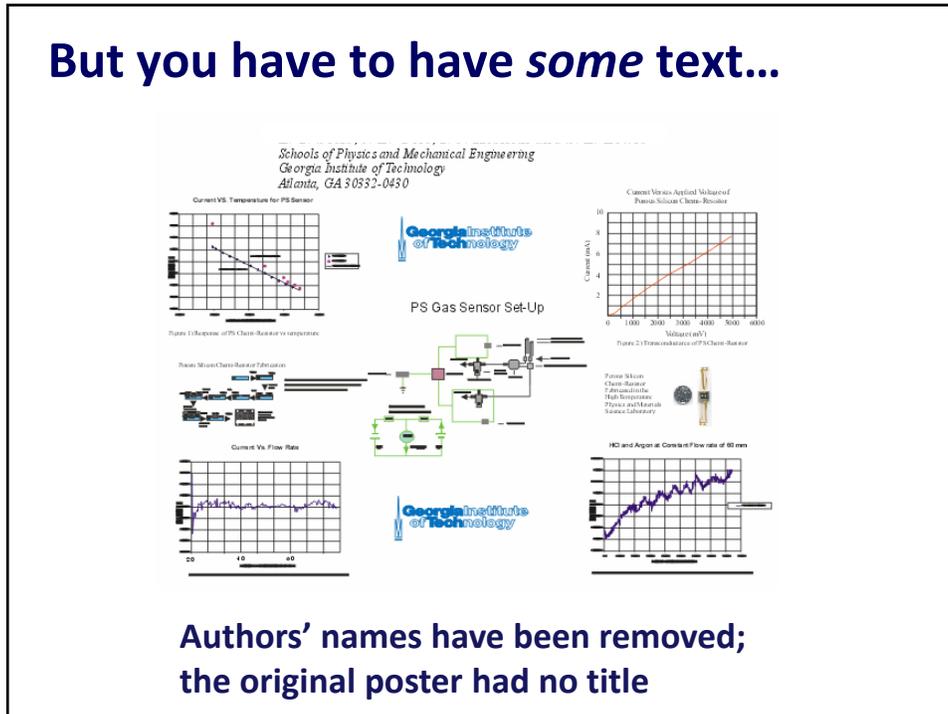
Crop and enlarge photos and simplify
drawings to focus attention on important
details

Scan photos at 300 dpi

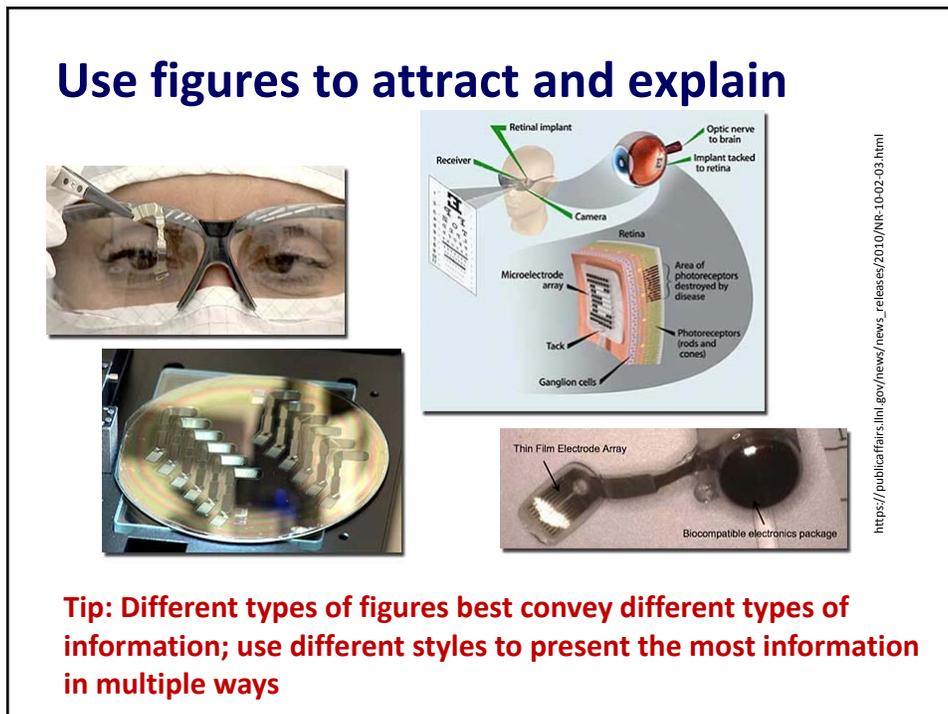
Provide a brief caption for every graphic;
tell people what to look for

Tip: People remember pictures, not words

But you have to have some text...



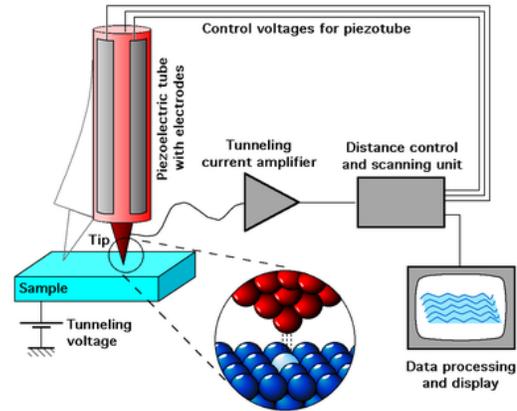
Use figures to attract and explain



Don't use pointless graphics*



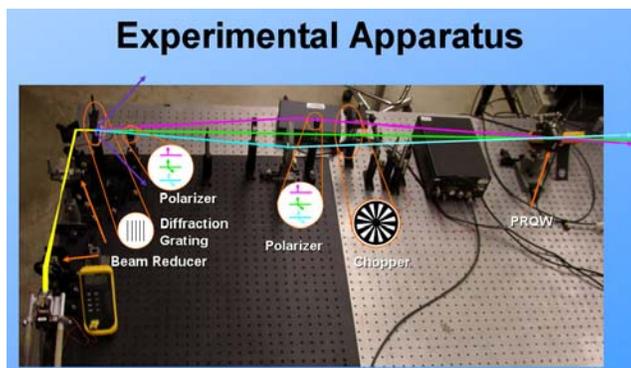
While an impressive display of expensive stainless steel and electronic circuitry, this photo conveys zero meaning



This simple cartoon shows how a scanning tunneling microscope works and what elements are important

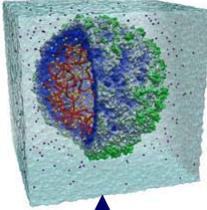
* That includes aerial photos of the accelerator!

This excellent graphic shows the apparatus *and* the process

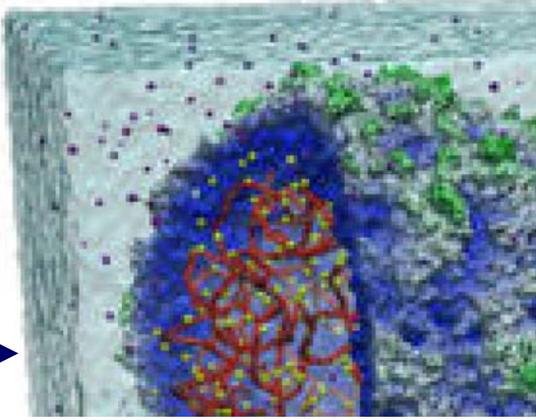


Tip: Show pictures of equipment *only* if they are related to an important *idea* that you want to convey

Avoid using graphics taken from the Internet; they're too low-res to print acceptably



Theoretical and Computational Biophysics Group
University of Illinois at Urbana-Champaign



Looks fine on your monitor; looks awful blown up to poster size and printed.

Make every graphic mean something; avoid "eye candy"

Improving the Cooling of Blades and Vanes in Gas Turbine Engines

VT **EXCEL**

To increase efficiency, gas turbine engines have to run at higher temperatures

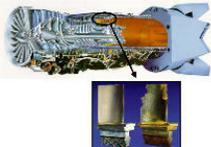


Jet engines

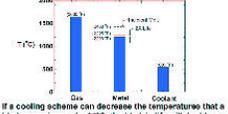


Power turbines

However, higher combustion temperatures reduce the life of the blades and vanes

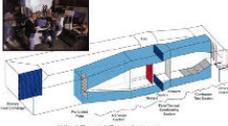


Better cooling schemes can dramatically affect the life of blades and vanes in gas turbines



If a cooling scheme can decrease the temperature that a blade experiences by 20°C, the blade's life will double

Our laboratory studies cooling schemes through experiments and computations

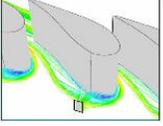


Wind Tunnel Experiments

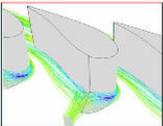


Computational Predictions

Results from our studies are helping sponsors design better gas turbine engines



Without Fillet: Unwanted Vortices



With Fillet: Vortices Reduced

In summary, we are improving the cooling of blades and vanes in gas turbine engines

Critique this poster:

Objective

To study factors for decisions by red squirrels (*Tamiasciurus hudsonicus*) to cross gaps in fragmented forests.



Forest-clearcut edge at central MBor Island study site, Tongass National Forest, Alaska. Logging is the primary land use.

Rationale

- Knowing how mammals move in fragmented forests can aid in location of reserves and corridors.
- Questions exist about which factors control decisions of mammals to cross gaps in their preferred habitats.



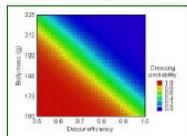
Translocation of individual squirrels across gaps for release and subsequent tracking.

Hypotheses

- Efforts to minimize predation risk, energy expenditures, or encounters with territorial conspecifics were hypothesized to control crossing decisions.
- Predation risk was assumed higher in clearcuts than in forests because of lower overstory cover and lack of trees for escape.
- Energy expended per distance traveled was assumed higher in clearcuts due to higher shrub stem densities.
- Conspecific encounter rates were lower in clearcuts than forests.

Methods

- Documented home ranges and territorial behaviors of squirrels living near clearcuts less than 10 years old.
- Induced movement by translocating individuals across gaps.
- Used radio-telemetry to document homing paths.
- Conducted call-back surveys along clearcut perimeters to determine conspecific defense levels.
- Used logistic regression to relate extrinsic factors, such as gap size, and intrinsic factors, such as body mass, to gap crossing probability.



Determinants of gap-crossing: Relationship between detour efficiency, body mass, and gap-crossing probability, based on logistic regression.

Results and Discussion

- Of 30 squirrels translocated at 5 clearcuts, 11 crossed clearcuts and 19 detoured along forested routes.
- Gap crossing probability was inversely related to squirrel body mass and detour efficiency (η_d):

$$\eta_d = \frac{\text{Direct distance home}}{\text{Indirect distance home}}$$

- Lighter squirrels were more likely to cross clearcuts. Squirrels in poor condition may take more risks when moving.
- Squirrels were more likely to cross if detours were long, suggesting that squirrels assess distances of detours and that predation risk, energetics, or both influence crossing decisions.
- Squirrels choosing forested routes avoided the route with the greatest number of highly defended territories.
- Non-significant factors were crossing distance, clearcut size, clearcut age, and individual's territorial behavior.

Acknowledgments:
 U.S. Environmental Protection Agency
 Office of Research and Development

Tip: If you're going to make the viewers read everything, you're useless!

Use a software presentation program to combine text and graphics easily on one page

RFLP-DNA CHARACTERISATION OF THE GENUS CLADOSPORIUM ISOLATED FROM BATHROOMS

University of Ljubljana, Biotechnical Faculty, Biology Dept., Vrata pot 111, SI-1000 Ljubljana, Slovenia

1. Introduction

2. Material and methods

3. Results and conclusions

4. Conclusions

Choose colors carefully

Colors affect how easily your poster can be read

Use a high contrast between background and text

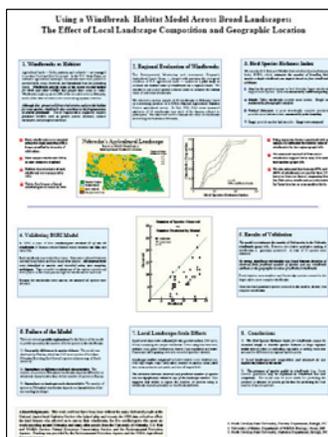
“Warm” colors are more visible, but don’t overpower with orange (even Illini orange)

Avoid using red/green or red/blue

Tip: Gradient backgrounds that look great on your monitor may not print properly

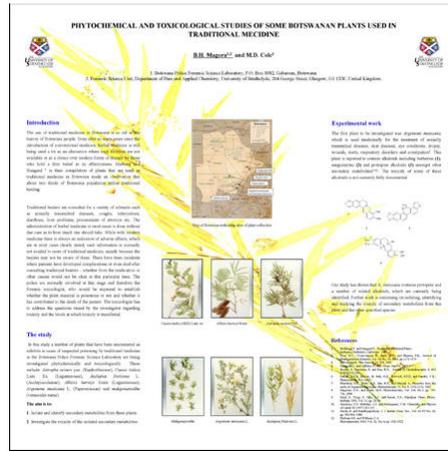
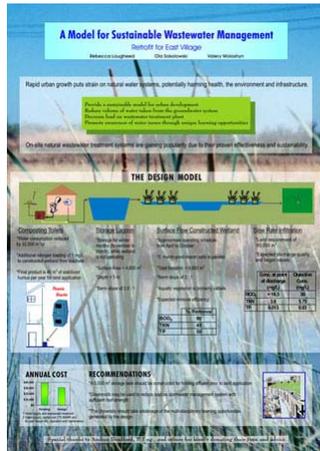


Use color to highlight, separate, or associate information visually



Tip: People expect color to mean something; don’t use color randomly

Choose neutral, light-colored backgrounds



Leave adequate “white space”

Effective posters look uncluttered

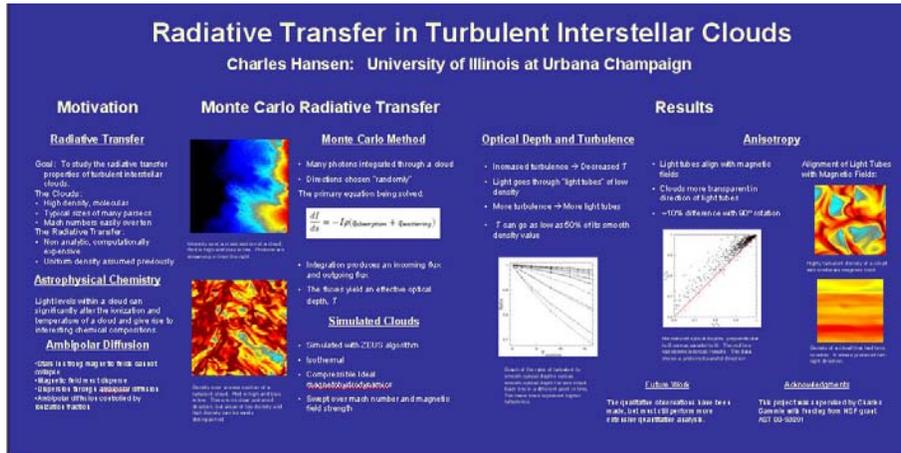
Use white space to isolate and emphasize important details

Leave at least 1.5 in (4 cm) of white space between columns

Balance elements on the page

Tip: Leave at least 1.5-in (4-cm) margins on all sides of your poster; no plotter prints to the very edge of the paper

“White space” doesn’t have to be white



Use easy-to-read fonts

Sans-serif fonts usually print well and are easier to read from a distance

ORNATE FONTS ARE HARDER TO READ

DON'T USE ALL CAPS, EVEN IN THE TITLE
—much harder to read (and proofread!)

Title—120 pt

Section headings—60 pt

Figure captions—48 pt

Text—36 pt

Text sizes are for a 28-in high by 56-in wide format

Scale the font with the size of the poster

Present text in lists rather than paragraphs

Figures promote audience interest, provide supporting evidence, help explain complex ideas and relationships quickly, and give the viewer something to remember

Use figures to:

- promote interest
- provide supporting evidence
- explain complex ideas quickly
- show relationships
- give the viewer something to remember

Make a timetable for preparing your poster, and stick to it!

- Identify your objectives
- Analyze your audience
- Make an outline of key points
- Assemble graphics
- Decide on text
- Prepare handouts if desirable
- Proofread everything *three* times
- Practice your “stump speeches”
- Rehearse questions



Find out *before* your session . . .

The location and time by which your poster is to be displayed

What kind of surface your poster will be mounted on

Whether you need to provide your own tape, thumbtacks, Velcro strips...

Whether other needed equipment will be provided (electrical outlet, table, easel)

Tip: Don't expect the meeting organizers to supply you with anything other than space

Be prepared to mount your poster on any surface

Your poster-hanging toolkit should include:

- Push pins or thumbtacks
- Straight pins or drawing pins
- Plastic mounting putty
- Velcro® strips and glue
- Clear PCV tape or masking tape
- Scissors



istockphoto.com - William Howell

Have a permanent marker the color of your text for emergency typo corrections

Have a small notebook and pen handy for notes

Tips for successfully presenting your poster:

Arrive early (early birds usually get the desirable locations)



Bring your own “poster hanging” emergency kit

Have your “stump speech” prepared to explain your work to visitors

- Give the big picture
- Explain why the work is important
- Have two versions—one for experts and one for non-experts

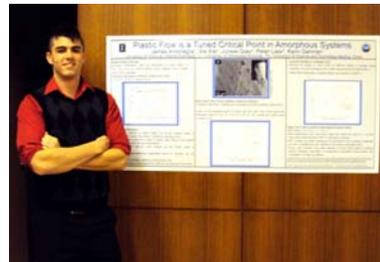
Greet each visitor with a smile; ask questions to elicit interest and level of understanding

Convey your enthusiasm for your research project

Greet people as they walk up to your poster

By your stance and expression, invite them to ask questions

Have your business cards, copies of your paper, or other handouts ready



PHYS 499 Posters, October 2012; James Antonaglia

Tip: Open your hands, lean forward, and *smile*

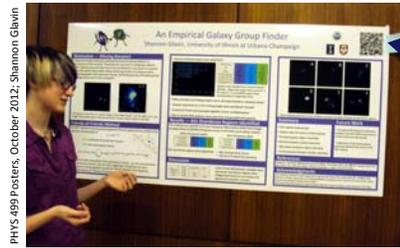
Have hand-outs available

A miniature version of your poster

An extended abstract or a summary

Reprints or preprints

Include your complete contact information



Tip: use a QR code to link to the group's web site or a copy of the paper

Tip: an 11-in × 17-in sheet of paper, folded in half, gives you four pages for additional information about your work in one handout

References and further guidance...



Edward R. Tufte,
The Visual Display of Quantitative Information, Graphics Press (2001)

<http://www.personal.psu.edu/drs18/postershow/>

<http://www.soe.uoguelph.ca/webfiles/agalvez/poster/>

<http://www.ncsu.edu/project/posters/>

<http://www.writing.engr.psu.edu/posters.html>

cmelliot@illinois.edu