Preparing a Poster for Presenting a Chemistry Topic

- ✓ Using Microsoft PowerPoint to prepare your poster
- ✓ Designing and preparing your poster
- ✓ Template for preparing your poster
- ✓ A list of resources for poster topics

Accompanied by a video at: http://www.youtube.com/watch?v=AN17WycNV2I

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Overview

Scientific posters are a common method for presenting information. Two typical examples of their use are as displays for summarising information on a topic and at scientific conferences for summarising some research carried out. In this guide, we will look at using posters to summarise information on a given topic. On the following pages, we:

- Explain how to designing and preparing your poster.
- Provide a worksheet for you to being preparing your own poster.
- Explain how to prepare a poster in Microsoft PowerPoint software.
- Provide a list of information sources as suggested poster titles.

This guide is accompanied by a video which can be found at:

http://www.youtube.com/watch?v=AN17WycNV2I

What is the purpose of a poster?

In the case of this guide, we will be considering posters being presented to your peers in an undergraduate chemistry course, as well as your lecturers who may be assessing you. Therefore your poster should aim to present a concise summary of your chosen topic in an interesting and informative manner. This should include:

- ✓ Sufficient text to explain your topic without being too much to read.
- ✓ Useful images to engage the viewer and explain your topic visually.
- ✓ References to allow the reader investigate more if they are interested in the topic.

Posters can be used to show how some of the general chemistry principles you learn about in lectures can be applied to particular scenarios.

What skills do I need to prepare a poster?

Preparing and presenting a poster means you will learn the following skills. As well as the core chemistry knowledge required in preparing a poster, you will notice that several transferable skills (i.e. skills that can be used in several situations) are listed. These skills are highly valued by employers and you can use the experience gained in preparing a poster as examples in interview situations.

These will be assessed as indicated in the table below.

Skill	Where I use it	How it is assessed
Researching a topic	This is the first stage in preparing a poster and involves sourcing information, reading about your topic, and preparing a succinct summary	Posters are assessed by content (40%)
Presenting information in a readable and engaging manner	Having researched the topic and decided what you wish to say, this stage involves preparing the poster layout so that it summarises the information effectively and engages readers by using well-chosen visual images	The visual impact of posters is assessed (30%)
Discuss a topic with peers and lecturers, explaining and elaborating on points made in the poster	This is where your chemistry expertise comes into play. Having read around the topic, you are well-equipped to discuss the poster content when people come to view it and talk to you about it.	The discussion element is assessed (25%)
Provide useful references for people who wish to follow up on the poster	In your reading, you will have come across useful references, and careful selection of 2 or 3 of these should be included, along with any references you used in preparing the poster	The inclusion of references is assessed (5%)

Designing your Poster

Your poster should be visual and eye-catching, make good use of images and not overly rely on text. There is a delicate balance when presenting information on a poster – you need just enough text to convey the main points, but not so much that it becomes too much to read. It is important to choose or create good visuals both to make for an eye-catching poster and to present as much information visually as possible.

A suitable size for a poster is **A1** (*84.1 x 59.4 cm (33.1 in × 23.4 in)*). You can set up these dimensions in MS PowerPoint – see the video linked for details: http://www.youtube.com/watch?v=AN17WycNV2I.

In order to give an idea of how you might present your information, a sample layout is shown overleaf. This can be used as a template for preparing posters, but as you begin to create your poster, you might find the layout changes/become a little more fluid. You should aim to include some creativity, whilst maintaining a professional feel to your poster.

Some suggested font sizes are included in the poster. You may wish to change these, but make sure that there is a consistent size to the different types of text (e.g. section headings, main text, figure legends).

- Title: Font size 52, bold
- Name and contact details: Font size 40
- Section headings: Font size 40
- Text; font size 28 – 32

The example poster has four areas of text and the references/further reading area. Each area should accommodate about 75 – 100 words, which along with the references means that your poster would have **300 – 400 words** plus the text of the references/further reading.

Getting Started: Preparing your Poster

A list of poster titles are provided (see back of this guide) and you will be assigned or choose one of these or a similar resource to use as a basis for preparing your poster. The first stage is to read this and make notes so that you can begin to plan what you will include on your poster. To get started with this, a worksheet is given overleaf. This involves the following steps:

1. **Decide topics:** You will probably find that each article provides an overview of the topic, and then includes two or three aspects or **themes** about a topic. In making notes, you want to highlight these so that you can prepare your poster.
2. **Images and Layout:** Once you have compiled the main sections of your poster, the next stage is to find some good visual images to accompany them. These should both be eye-catching and help explain what the topic is about. You can now sketch out how you plan to arrange the information on your poster.
3. **Write content:** Once you have identified your themes, and know what images you will include, and how you plan to arrange your information, you can begin to write the text to go on your poster. Make sure that this is concise, sticks to the topic, and utilises the information presented in the image.
4. **References and further reading:** Include the references to your sources and images, and provide one or two useful further reading resources.

Remember, your aim is to show what the underlying chemistry is to your poster topic and therefore it is important to include some core chemistry related to the poster topic.

Poster title (font size 52). The title should effectively summarise the poster

Your name, contact details (font size 40)

Institution logo

Introduction (font size 40)

Brief section to give an overview of what the poster is about

About 50 – 75 words (font size 28)

The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

Image

Visual image that provides a good summary of poster

Theme 1 (font size 40)

Explain first component of poster you wish to discuss (75 – 100 words)

Theme 2 (font size 40)

Explain second component of poster you wish to discuss (75 – 100 words)

Image

Include images that may explain each of the concepts you are discussing in more detail

Image

Include images that may explain each of the concepts you are discussing in more detail

Theme 3 (font size 40)

Explain third component of poster you wish to discuss (75 – 100 words)

References/Further Reading

List of references that you found useful in preparing poster and where the reader can find out more

The Chemistry of Paper Conservation

Joe Bloggs joebloggs@mail

Introduction

Approximately one third of paper in copyright libraries is too brittle to handle and another third will need attention over the next 100 years.

The main cause of degradation is decomposition of cellulose (Figure 1), the main component of paper. Decomposition is acid catalysed and one successful method to treat paper is change its pH by washing in alkaline solution.

Paper can also decompose because of what is written on it. This is presented below and possible solutions highlighted.

What is Paper?

Paper consists of cellulose chains which hydrogen bond together to form fibrils. These clump together to form fibres which mesh together to form the paper structure (Figure 2). Filter paper is an example of paper comprising of mostly cellulose. Additives can be included to strengthen paper's structure.

Paper can decompose in acidic conditions by acid-catalysed hydrolysis of the cellulose chains (Figure 3). This shortens the cellulose chains and makes the paper more brittle.

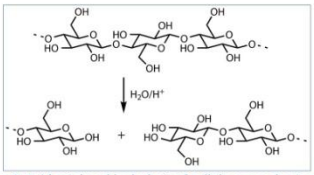

Figure 3: Acid catalysed hydrolysis of cellulose can shorten the chains and make paper more brittle (Ref 1)

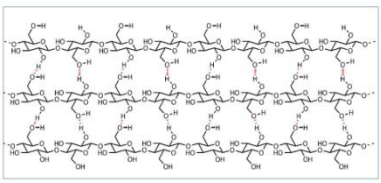

Figure 1: Paper consists of cellulose which aggregates together due to H-bonding between the chains (Ref 1)

Preventing Degradation

Paper that is decomposing due to acidic environments can be treated by washing in an alkaline bath (for example $Mg(OH)_2$), at a pH of ~8. This will:

1. Allow the H-bonds to reform between the fibres of the paper material.
2. Neutralise and acid present and also form deposits of MgO that can act against future acidification.

Fragile papers can be dipped into the alkaline bath on a fine mesh to prevent them from breaking apart.

Ink on Paper

Ink on old papers is usually iron gall ink, which contains Fe(II) ions. These can catalyse the production of hydrogen peroxide, which can oxidise and degrade cellulose. It is prevented by adding chelating agents to the paper to complex the iron (e.g. calcium phytate).

$$Fe^{2+} + O_2 + H^+ \rightarrow Fe^{3+} + HOO^{\bullet}$$
$$Fe^{2+} + HOO^{\bullet} + H^+ \rightarrow Fe^{3+} + H_2O_2$$

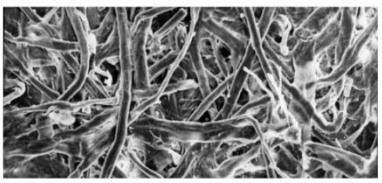

Figure 2: Cellulose chains mesh together to form the structure of paper (Image: Core Materials on Flickr)

Figure 4: Old ink can also lead to the degradation of paper by catalysing the oxidation of cellulose (Ramona Duncan-Huse/Indiana Historical Society)

References & Further Reading

1. M. Seery, *Education in Chemistry*, 2013, March, 22 – 25.

2. *Conservation science: heritage materials*, E. May and M. Jones (Eds), RSC Publishing, 2006, (Chapter 3).

3. V. D. Daniels, *Chem. Soc. Rev.*, 1996, **25**, 179.

Except where indicated, all images in this poster are taken from reference 1.

Poster template (top) and completed poster (bottom)

See video for details on designing this poster.

Preparing your Poster: Example (*blank sheet overleaf*)

- Poster title: *The Chemistry of Paper Conservation*

- Main information source(s) *Education in Chemistry, March 2013, 23, and some links within*

- Brief summary of what article is about (this is the first draft of your poster's **introduction**)

Paper can become more brittle over time due to acid hydrolysis and oxidation. By understanding the chemical processes that occur when the paper degrades, we can implement strategies to overcome them.

This article covers:

- the chemical components of paper – cellulose;

- how paper forms (through H-bonding in cellulose);

- how paper can degrade (acid hydrolysis of cellulose and oxidation reactions) and strategies to repair degradation

- the effect of ink on paper

- Highlight two/three main points raised by article (these will be the basis of your poster **content**)

Main theme 1:

That paper consists of cellulose (mention H-bonding) and that it can undergo acid hydrolysis which degrades it and causes it to become brittle

Main theme 2:

Ways used to repair paper that has undergone degradation – focus on acid hydrolysis, but if space mention oxidation

Main theme 3:

Effect of ink on old paper and ways used to repair/prevent degradation due to ink

You may wish to include another theme from another reference source if this article does not give at least two.

Images to be used – source of images you will use and what they will add to the poster

Article contains some useful images. Also found books (list here) and this website (list here) which has some useful diagrams on cellulose

Further references/reading that would be useful to include

Some links given in paper that are worth following up

Preparing your Poster

- Poster title:

- Main information source(s)

- Brief summary of what article is about (this is the first draft of your poster's **introduction**)

- Highlight two/three main points raised by article (these will be the basis of your poster **content**)

Main theme 1:

Main theme 2:

Main theme 3:

You may wish to include another theme from another reference source if this article does not give at least two.

Images to be used – source of images you will use and what they will add to the poster

Further references/reading that would be useful to include

Information Sources for Posters

The following titles are taken from articles in *Education in Chemistry* and *Chemistry World*. ~Web links have been provided where possible (thanks to David Sait, Education in Chemistry), others are usually available in a typical college/university library.

Poster Title	Initial Reference to Source	Web Reference (if available)
What's in your strawberries?	Education in Chemistry, 2012, May, 23.	http://www.rsc.org/Education/EiC/issues/2012May/whats-in-your-strawberries.asp
Isolating Fluorine Gas	Education in Chemistry, 2011, Sept, 148-151	http://www.rsc.org/Education/EiC/Restricted/2011/september/fluorine.asp
Curare and the case of Mario Jascalevich	Education in Chemistry, 2011, May, 84	http://www.rsc.org/Education/EiC/Restricted/2011/May/ForensicScienceCaseOfDrMarioJascalevich.asp
Medicinal Properties of Radium	Education in Chemistry, 2011, March, 56	http://www.rsc.org/Education/EiC/Restricted/2011/March/RadiumAKeyElementInEarlyCancerTreatment.asp
Catalytic Converters	Education in Chemistry, 2011, Jun, 107	http://www.rsc.org/Education/EiC/issues/2011June/TheEvolutionOfCatalyticConverters.asp
Medicinal Applications of Iodine	Education in Chemistry, 2011, Jun, 120	http://www.rsc.org/Education/EiC/Restricted/2011/June/DiscoveringIodine.asp
Lead in the Environment	Education in Chemistry, 2010, Sept, 153	http://www.rsc.org/Education/EiC/Restricted/2010/September/LeadInTheEnvironment.asp
Mass Spectrometry	Education in Chemistry, 2010, May, 75-82	http://www.rsc.org/Education/EiC/Restricted/2010/May/ModernMassSpectrometry.asp
Detecting Drug Abuse in Sport	Education in Chemistry, 2010, March, 44	http://www.rsc.org/Education/EiC/issues/2010Mar/FiveRingsGoodFourRingsBad.asp
Carbon Capture and Storage	Education in Chemistry, 2010, July, 114	http://www.rsc.org/Education/EiC/Restricted/2010/July/HaveYourCoalAndBurnIt.asp
Breath Analysis	Education in Chemistry, 2010, Jul, 110	http://www.rsc.org/Education/EiC/Restricted/2010/July/Copy_2_of_BreathAnalysis.asp
Photocatalysts for Self-Cleaning Surfaces	Education in Chemistry, 2010, Jan, 14	http://www.rsc.org/Education/EiC/issues/2010Jan/NewChallengesForPhotocatalysts.asp
Ocean Acidification	Education in Chemistry, 2009, Nov, 182	http://www.rsc.org/Education/EiC/issues/2009Nov/OceanAcidification.asp

The chemistry of smell	Education in Chemistry, 2009, Mar, 45	http://www.rsc.org/Education/EiC/issues/2009March/smell-chemical-molecule-receptor-shape.asp
Nanomedicines	Education in Chemistry, 2008, Jul, 113	http://www.rsc.org/Education/EiC/issues/2008July/NanomedicineArrives.asp
Greenhouses Gases	Education in Chemistry, 2008, Jan, 17	http://www.rsc.org/Education/EiC/issues/2008Jan/CF3SF5SuperGreenhouseGas.asp
Hydrogen Fuel Storage	Education in Chemistry, 2007, Nov, 176	http://www.rsc.org/Education/EiC/issues/2007Nov/FuellingFutureSolidPhaseHydrogenStorage.asp
Synthesis of Ammonia	Education in Chemistry, 2007, May, 82	http://www.rsc.org/Education/EiC/issues/2007May/WhoReallyDiscoveredHaberProcess.asp
A new generation of anti-malarials	Education in Chemistry, 2006, Jul	
CFCs and the Environment	Education in Chemistry, 2005, Sept, 124	
Smart Glass	Education in Chemistry, 2005, May, 75	
DVD Chemistry	Education in Chemistry, 2005, Mar, 42	
Preparing and Characterising Nanoparticles	Education in Chemistry, 2005, Jul, 99	
Paracetamol	Education in Chemistry, 2005, Jul, 102.	
Chemistry at the origin of life	Education in Chemistry, 2005, Jan, 21	
Chiral molecules	Education in Chemistry, 2004, Sept, 123	
Cleaning Up: Formulation Chemistry	Education in Chemistry, 2004, May, 77	
Photodynamic Therapy	Education in Chemistry, 2004, May, 71.	
Explosive Chemistry	Education in Chemistry, 2004, 159	

Thallium Poisoning	Education in Chemistry, 2003, Sept, 132	
Chemistry of Paints	Education in Chemistry, 2003, Sept, 123	
Air Analysis	Education in Chemistry, 2003, Nov, 154	
Detecting Chemicals in the Universe	Education in Chemistry, 2002, Nov, 152	
Clean Water Supply	Education in Chemistry, 2002, May, InfoChem page 2	
Modern Fibres for future clothing	Education in Chemistry, 2002, Mar, 43	
Fingerprint Detection	Education in Chemistry, 2002, Jul, 105	
Acid Rain	Education in Chemistry, 2002, Jul, 101	
Ecstacy	Education in Chemistry, 2001, Sept, 123.	
Ozone: Protector or Pollutor	Education in Chemistry, 1999, July, 99.	
Uses of Electrochemical Cells	Education in Chemistry, 1996, Nov, 154	
Solid Oxide fuel cells	Education in Chemistry InfoChem Supplement, 2011, Sept.	
Nanoparticle Plasmons	Chemistry World, 2012, Sept, 56	
Smart Clothing	Chemistry World, 2012, Oct, 59	
the Discovery of DNA	Chemistry World, 2012, Nov, 59	
Explosive Detection	Chemistry World, 2012, May, 49	
The chemistry of early life	Chemistry World, 2012, Jul, 51	
Desalinating Water for future supply	Chemistry World, 2012, Feb, 44	

Nanosilver in the environment	Chemistry World, 2012, Feb, 37	
Photodynamic Therapy	Chemistry World, 2012, Apr, 52.	
Chemistry of Diamonds	Chemistry World, 2011, Sept, 48.	
New materials for lightweight aircraft	Chemistry World, 2011, Oct, 60	
Hydrogen Fuel Cells	Chemistry World, 2011, Oct, 44	
Chemistry of Coffee	Chemistry World, 2011, May, 36.	
Coffee: Friend of Foe	Chemistry World, 2011, May, 36	
Particle Size Analysis	Chemistry World, 2011, Mar, 51	
Nitrous Oxide	Chemistry World, 2011, June, 44	
Counterfeit Medicines	Chemistry World, 2011, Jan, 56	
Insect Repellants	Chemistry World, 2010, Sept, 44	
The Science of Cocktails	Chemistry World, 2010, December, 35.	
The Artificial Leaf	Chemistry World, 2009, May, 42.	
Drugs in Drinking Water	Chemistry World, 2008, Sept, 48.	
A whisky tour	Chemistry World, 2008, Dec, 40.	
Eradicating Malaria	Chemistry World, 2008, Apr, 50.	
Chemistry of Quitting Smoking	Chemistry World, 2007, Jul, 44.	
Chemistry of Paper Conservation	Education in Chemistry, 2013, March, 22.	

Further Reading

For more information on preparing posters, the following resources are useful:

1. Overton, T., Johnson, S. and Scott, J., *Study and Communication Skills for the Chemical Sciences*, Oxford University Press, Oxford (2011). Chapter 13 is a good reference for poster design and presenting posters at academic conferences.
2. Bailey, P. Shinton, S., *Communicating Chemistry*, Royal Society of Chemistry, London (1999). Chapter 10 is about preparing posters.
3. Examples and PowerPoint Templates of Posters, http://phdposters.com/gallery.php (accessed March 2013)