Persuasive Scientific Presentations

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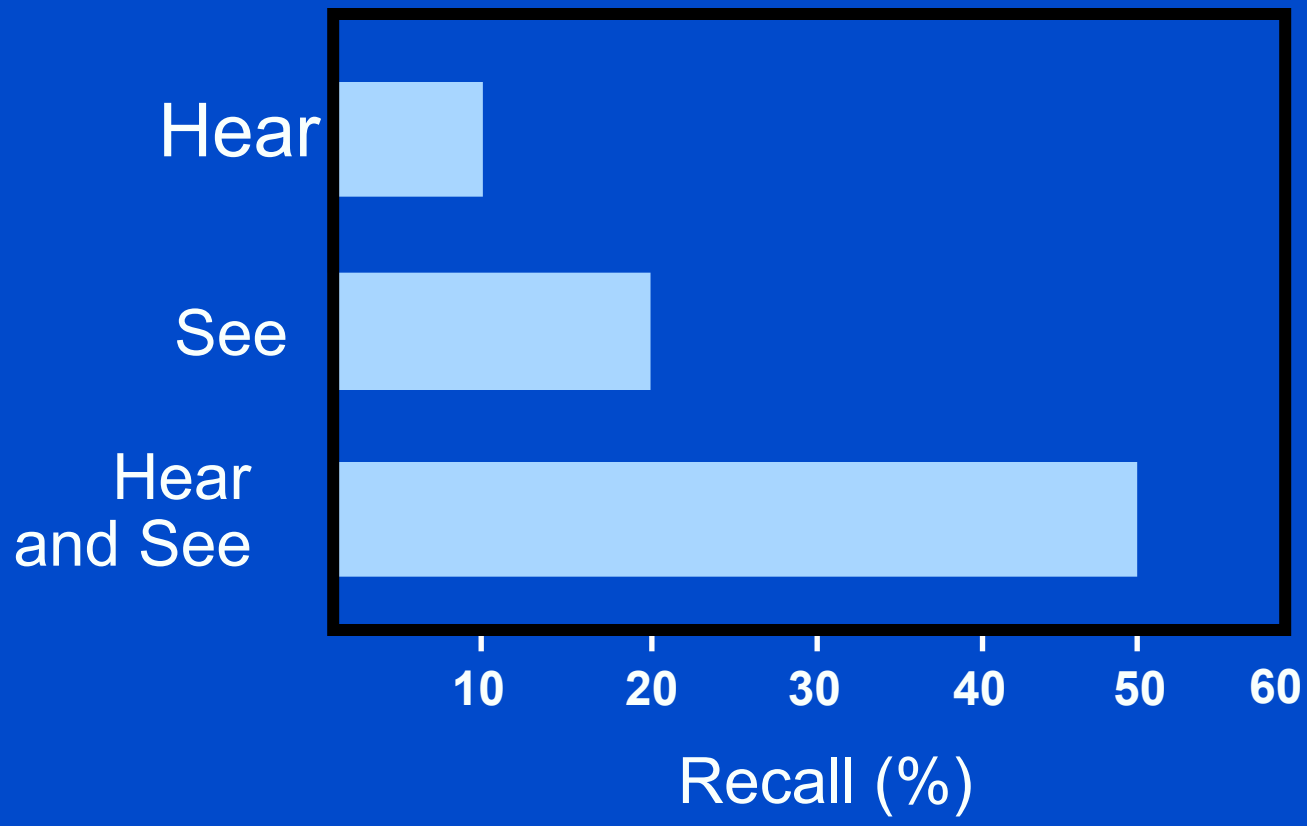
The best retention occurs for presentations that are both vocal and visual



Data from the Wharton Research Center

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Research shows that the brain is good at reading, good at listening, but not doing both simultaneously.

John Sweller, University of South Wales

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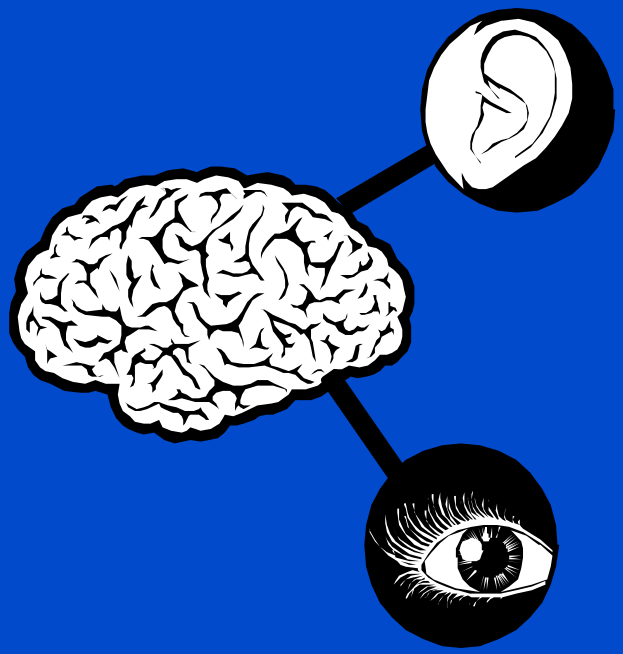
To resolve the problem we first have to understand how the brain works



verbal

visual

Cognitive scientists say the mind processes information in 2 channels

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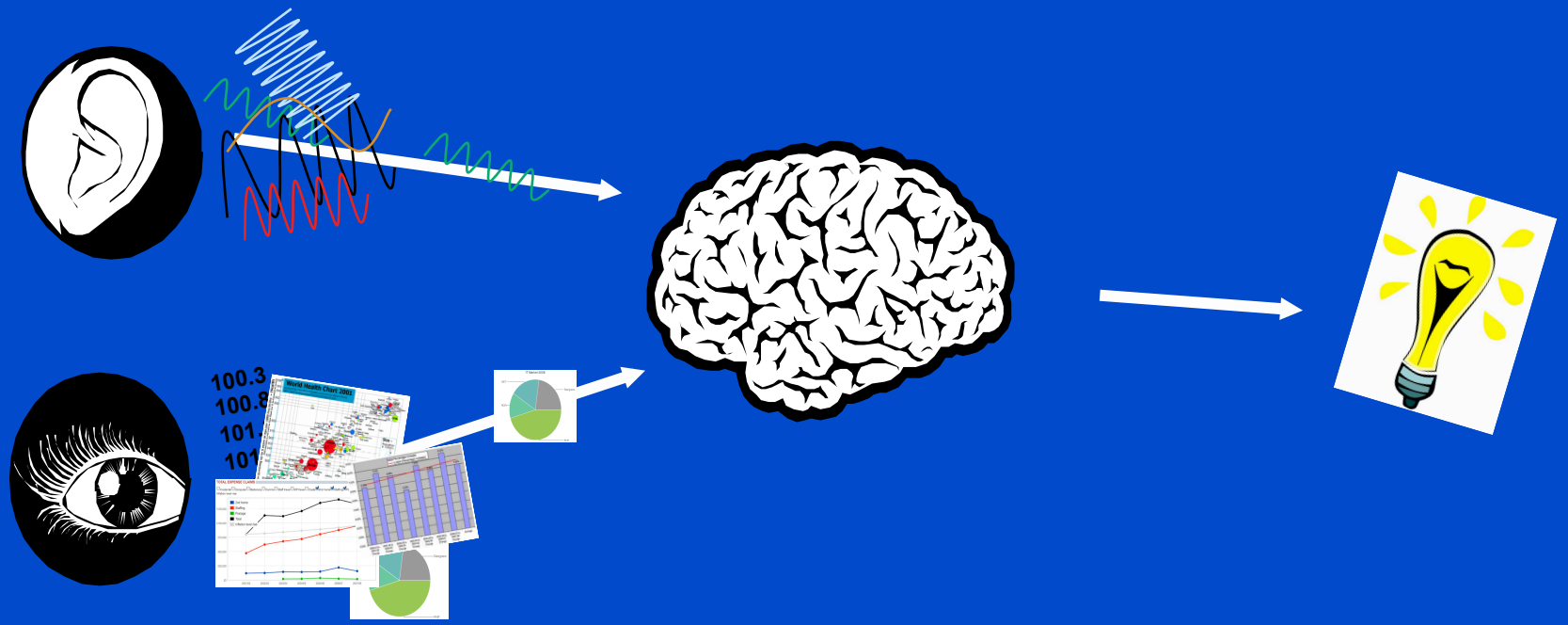
The mind pays attention to only a few pieces of information in each channel



Then it must select, organize, and integrate what's important

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To be effective, the audience must grasp the content quickly

Use short statements

Use images to increase comprehension

Water has special thermal properties

It helps to controls the climate on our planet

It helps to maintain our body temperature

Use blank spaces to enhance readership

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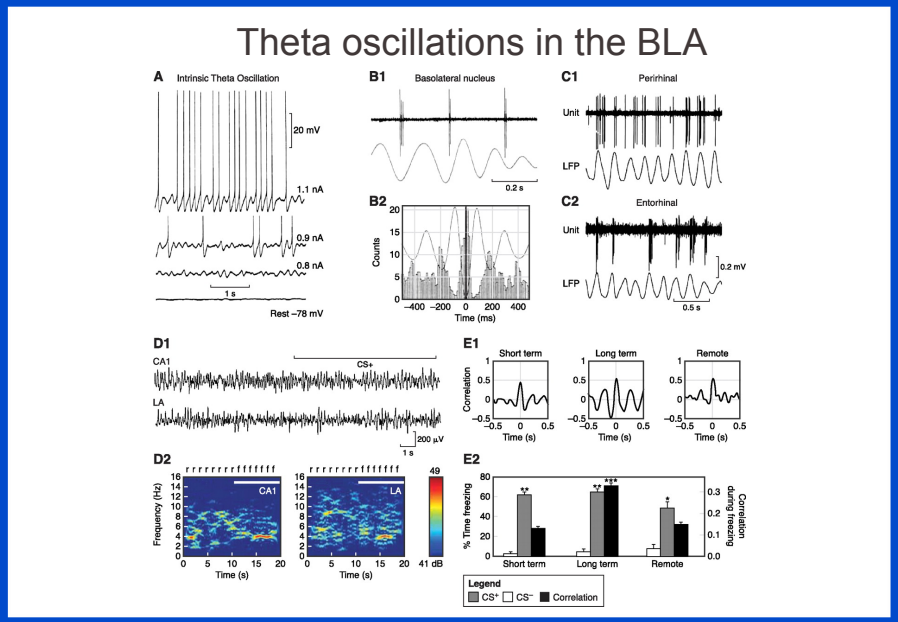
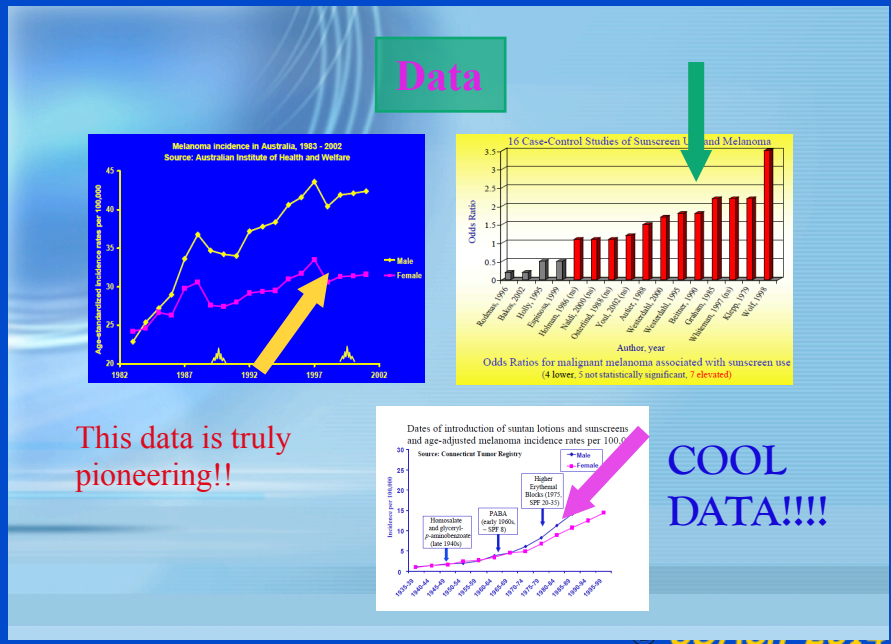
Too much information and distractions can confuse and annoy your listeners





Don't force your audience to choose between listening to you - OR reading your slides

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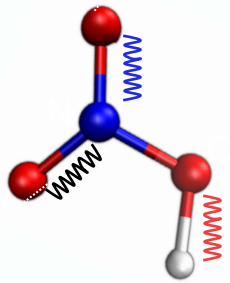
The slides should follow several rules

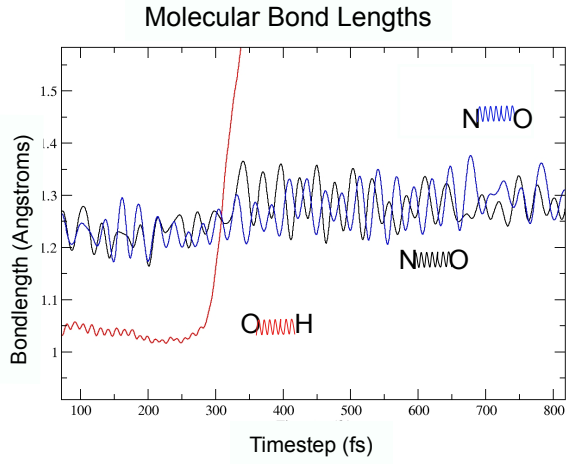
Use a sentence headline to state the slide's purpose

Use images to support the sentence

MD simulations show that nitric acid readily dissociates in water



The OH bond breaks upon dissociation



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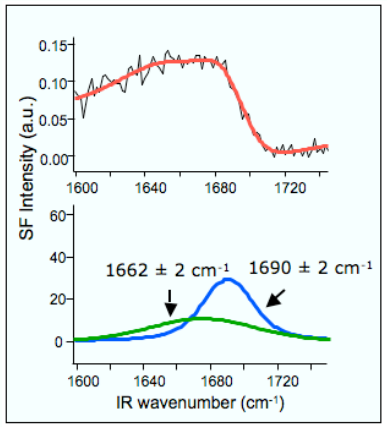
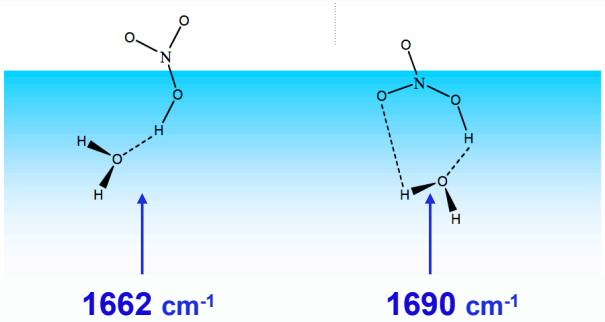
The statement at the top should have no more than two lines

The surface spectroscopy shows nitric acid in two different forms at a water surface





The two HNO_3 molecules differ by the number of bonds to water.

Call-out, if necessary: keep to 1-2 lines

If necessary, identify key assumption or background for audience—keep to two lines (18–24 point type)

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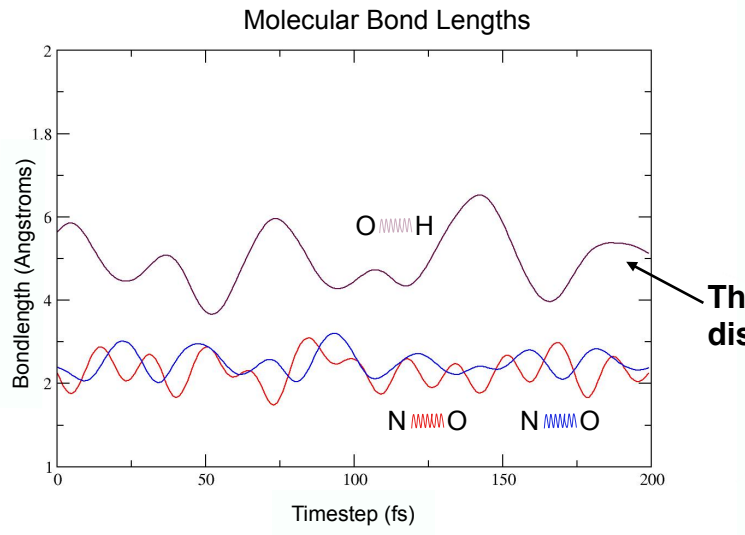
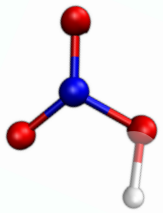
Use typography that is quickly and easily read

Use a readable simple font (Arial, Gill Sans)

Use a high contrast between words and background

MD simulations show that nitric acid does not dissociate when on a water surface





The proton does not dissociate

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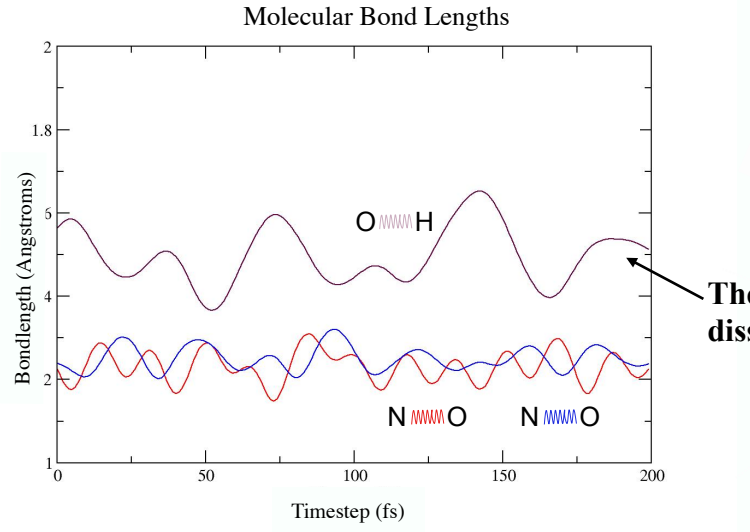
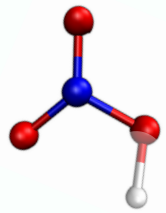
Some fonts work for manuscripts but not for presentations

Times Roman Font is harder to read quickly

MD simulations show that nitric acid does not dissociate when on a water surface





The proton does not dissociate

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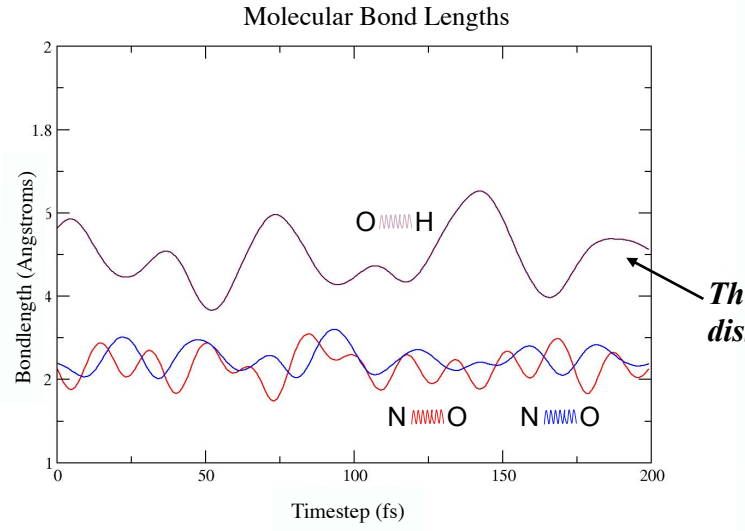
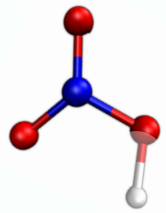
Even italics can slow the reading and comprehension

MD simulations show that nitric acid does not dissociate when on a water surface





The proton does not dissociate

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The title slide should draw interest

Understanding Environmentally Important Processes at Liquid Surfaces

Geri Richmond
Department of Chemistry
University of Oregon
Eugene, OR

ACS National Meeting
April 20, 2010

Understanding Environmentally Important Processes at Liquid Surfaces

Geri Richmond
University of Oregon
ACS National Meeting

Use the title slide to connect with your audience

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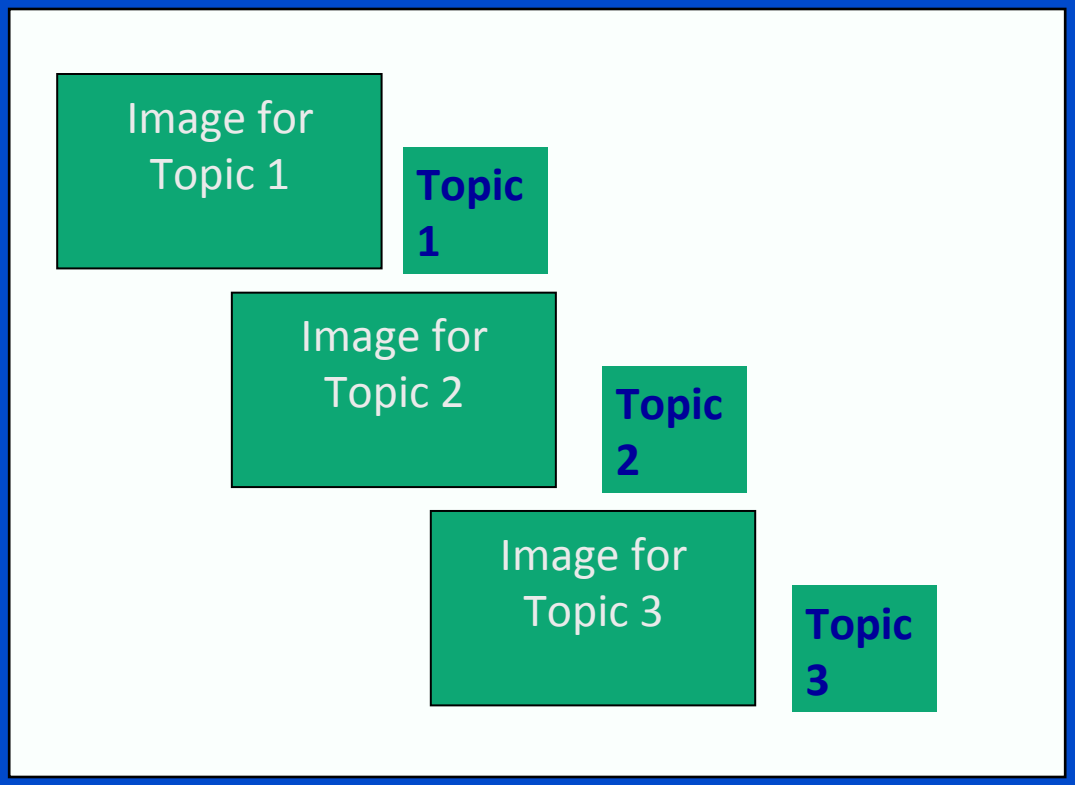
The “outline” slide should be a visual roadmap



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The focus slide should be a visual roadmap

Presentation Outline

1. Introduction
2. Background
3. Methods
   - *experimental*
   - *theoretical*
4. VSFS studies of water surfaces
5. Studies of how gases adsorb on a water surface
   - *room temperature studies*
   - *low temperatures studies*
6. Studies of nitric acid at a water surface
7. Conclusions and future studies
8. Acknowledgements

This presentation shows the unique structure and reactivity that is present at water surfaces

hydrogen bonding at water surfaces

gaseous adsorption at water surfaces

surface acidity of HNO_3 solutions

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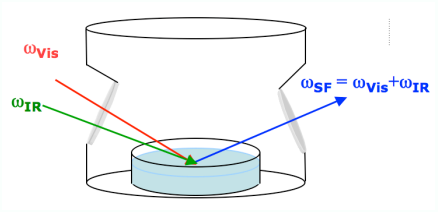
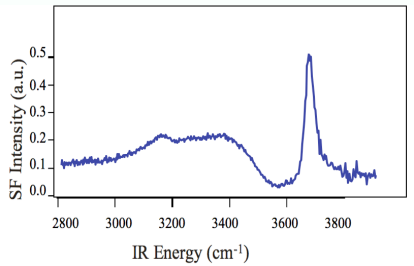
The methods slide should follow the same format

To probe the water surface we use surface vibrational sum frequency spectroscopy (VSFS)

The technique selectively probes the topmost layers of the interface



Tunable pulsed lasers probe the surface species



The resulting vibration spectrum measures surface molecules

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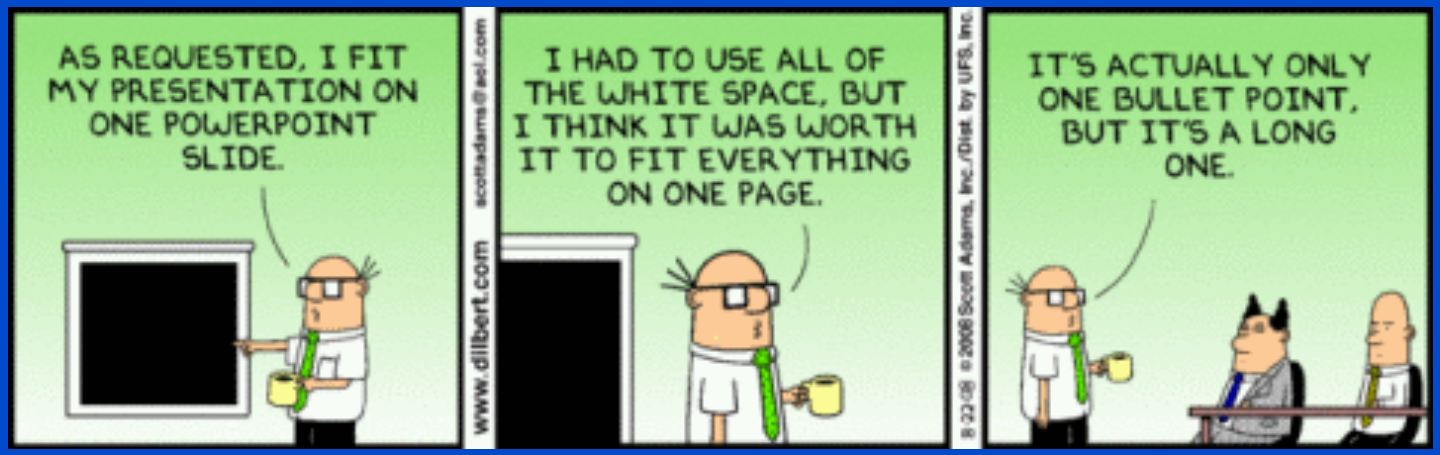
The most difficult part is to consider what to include and what to exclude on each slide



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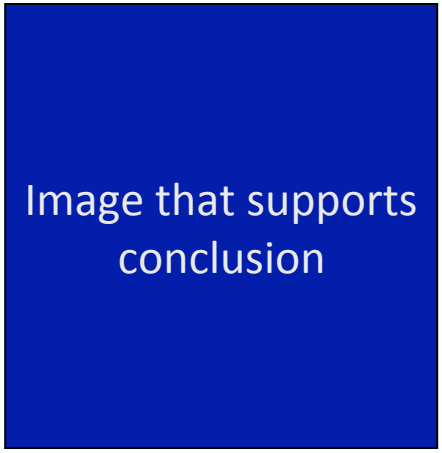
The summary slide headline states the most important assertion of the presentation

This sentence summarizes the most important conclusion of the presentation)

Supporting point (no more than two lines)

Another supporting point (parallel to the first)



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Don't use long lists that limit comprehension

Summary of the This Presentation

- The amazing discovery that no one knew about
- Another remarkable discovery that you maybe knew
- A third fact that you might not have noticed
- And a fourth finding that only few people ever heard of
- Throw in a fifth discovery that I particularly like
- A sixth discovery that I didn't have time to talk about
- And two final smaller discoveries that are also important
  - the one found in the noise
  - a second found by turning the data upside down

Avoid lists with more than four items.

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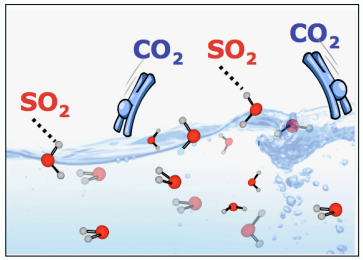
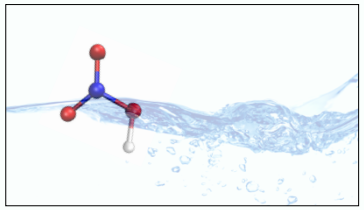
The summary slide headline states the most important assertion of the presentation

The surface of water has unique properties that control its chemical properties

Water participates in weak H-bonding at the topmost surface layers



SO_2 adsorbs at the surface whereas CO_2 quickly absorbs



Nitric acid is a weak acid at aqueous surfaces

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Keep your audience engaged

Don't read your slides!

Don't talk to your slides!

Don't apologize for your slides!

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Limit the number of slides

Max: 1 slide per minute

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Remember: If you want to be heard, you must:

Project your voice

Use good breathing techniques

View your whole body as an instrument of sound:

- the larynx and pharynx, the mouth, and the nose

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Use Effective Body Language

Tall, open posture and gestures

Head up

Eye contact with the room

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Research shows that you can summon a surge of power and confidence with simple exercises

Holding a "power body pose" for 2 minutes

- increases feelings of power

- increases tolerance for risk

Strong body poses

Weak body poses

The powerful postures allowed subjects to gain confidence due to psychological, physiological, and behavioral changes

Harvard Business School, "Power Posing: Fake It Until you Make It", September 20, 2010

Research by Prof. A.J.C. Cuddy published in Psychological Science, 2011

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Be expansive with your body to show and build confidence

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And finally,

rehearse, rehearse and rehearse

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