

A level Physics preparatory task

You are to prepare a presentation about Superconductivity, which should be in the form of a powerpoint presentation, suitable for sharing with other students about to embark upon their studies in A level Physics. You can, therefore, assume that your audience has a good understanding of GCSE Physics/Combined Science topics, and the potential to comprehend more advanced concepts too. You should aim to explain in as much scientific detail as possible the Physics principles behind any features you mention.

Any decent A level Physics textbook will provide some ideas for you if needed as a starting point, and the internet is likely to be your major research tool. A paper copy of your presentation (and the notes to assist your delivery) should be handed into your Physics teacher at the start of the course in September; he will probably ask you to send him an electronic copy then too. It is expected that a number of students will give their presentation to the rest of their set.

Your presentation should cover the following points:

- The history of superconductivity's discovery
- The challenges facing superconductivity before 1986 and how they were overcome
- Some of the applications of superconductivity (to include the production of strong magnetic fields and the reduction of energy losses in transmission of electric power)

Guidance for carrying-out your task

Step 1: Research: what is superconductivity?

Find out what superconductivity is and how it was discovered.

Step 2: Research: what happened in 1986?

Summarise the main events of the 1986 discovery and their implications for society.

Step 3: Research: applications of superconductivity

Compile a list of the current applications of superconductivity. For each one briefly summarise the application and its implications on society. Look out for the 'squids'!

Step 4: Prepare your report

Gather all the information you have found and prepare your report on superconductivity.

Give your presentation the following sections for its structure:

1. What is superconductivity?
2. What happened in 1986?
3. Applications of superconductivity

Step 5: Create section summaries

Summarise the most important information from each section of your research. These summaries should form the basis of your powerpoint slides, which you can then discuss in more detail during your presentation, using your delivery notes.

Remember:

- You should not merely copy and paste pages of material from the internet
- You should not include any material you do not understand, and hence could not answer questions about
- Do not overload your powerpoint slides with information
- Include relevant photographs and diagrams

Useful resources for the course

A level course text: AQA A level Physics Oxford (by J Breithaupt)

(Upon starting the course, you will be provided with electronic access to this book and will have the option of making a deposit payment to obtain a 'hard' copy).

General interest publications: New Scientist magazine
BBC Focus magazine
Cosmos magazine

Useful websites: www.s-cool.co.uk/a-level/physics
www.howstuffworks.com
www.thenakedscientists.com
www.physicscentral.com
www.aqa.org.uk (for specification and examination papers)

Mr P Jones, Head of Science/Physics