

Structure and Matter Research Report

The principals of atomic and molecular structures have benefited society by allowing the development of many new technologies. In this research report you are going research and explain how the understanding and application of chemistry lead to a new development in our society.

Possible Topics:

- Creation of superglue created on the basis of the structure of matter, chemical bonding, and other properties of matter.
- Creation of bullet proof fabric on the basis of the structure of matter, chemical bonding, and other properties of matter.
- Potential applications of nanoparticles in medicine. What negative impacts could this have on the environment?
- Creation of superconductors on the basis of the structure of matter, chemical bonding, and other properties of matter.
- Application of qualitative techniques in drug detection.
- Application of qualitative techniques in the detection of counterfeit money.
- Why is the sky blue and what are sunset red? (also why is the grass green and clouds white)
- How does chemistry produce the different colours within fireworks.
- The use of irradiation in the food industry.
- The use of radioactive tracers in medicine.
- How does spectroscopy aid in criminal investigations?
- How has the use of X-ray crystallography and mass spectrometry advanced our understanding of atomic and molecular structure? What social benefits are associated with such advances?
- How do MRIs work and how is their development routed in chemistry?
- What causes the auto borealis and how is it related to chemistry?
- How may cobalt-60 be used to treat cancer?
- What contributions did Harriet Brooks make to atomic theory?
- How did Frederick Soddy contribute to our knowledge of atomic theory?
- What is meant by the term 'paramagnetism' and how does it influence atoms?
- What is the Stern-Gerlach experiment and how did it add to our knowledge of electron configurations?
- What is ESR (electron spin resonance) and how may it be used in different areas?
- How did the knowledge of line spectra lead to the discovery of helium?
- Describe the research that lead to John Polanyi's Nobel Prize for Chemistry.
- Describe laser technology and everyday uses.
- What research lead to Linus Pauling's Nobel Prize in Chemistry? What was Pauling stand on vitamin C intake and how was it controversial?
- Wetting agents are often used in agriculture. What are wetting agents and how are they related to intermolecular forces?
- Describe Robert J. LeRoy's research and what findings they lead to in chemistry.
- Why does plastic wrap cling to glass but not metals. Use intermolecular forces in your answer. What controversy surround plastic wrap?
- What is Nitinol and how does it work?
- What is moissanite and how us it manufactured? How can you distinguish it from a real diamond?
- Describe Max Planck's research and how it contributed to atomic theory.
- How can chemistry be used to determine the colours of extinct animals (using fossils).
- What are fusible alloys? How are they created and what are they used for?

SCH 4U
J. Kropac

Marking Rubric:

Explains the relationship between the technology and chemistry

0 1 2 3 4 5 6 7 8 9 10

Use of chemistry terminology from this unit

0 1 2 3 4 5 6

Overall tone and voice of paper

0 1 2 3 4

References: Internal

0 1 2

Referencing: External

0 1 2

Total Marks: /24

Referencing Guide

Internal Citations

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According to Smith (2009),..... OR
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