**AP Chemistry Project – Personal Interest Research Project/Final Exam**

**Purpose**:

Students will individually investigate a chemistry topic that holds personal interest. This may be a topic that is relevant to your intended major or future career, or something that has always intrigued or perplexed you. Alternatively, you could investigate deeply one of those topics that seemed to make no sense during the year, where inevitably we just moved on.

The project has four parts: Topic and outline, white paper, poster, and presentation. The presentation doubles as your final exam.

Due on Day 1 (Monday, May 20): A project outline and timeline.

**Step 1 Choose a topic and create a timeline**

 Select your topic. Investigate the science and resources available.

 Here are some websites to get you started: (there are many more links out there)

 [Science Daily – Chemistry](http://www.sciencedaily.com/news/matter_energy/chemistry/) - https://www.sciencedaily.com/news/matter\_energy/chemistry/

 [Scientific American](http://www.scientificamerican.com/) - http://www.scientificamerican.com/

 [Popular Science Magazine](http://www.popsci.com/) - http://www.popsci.com/ [American Chemical Society High School Periodical](http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_SUPERARTICLE&node_id=2119&use_sec=false&sec_url_var=region1&__uuid=6d53511f-6dcd-4cd2-ad7a-305419371eda) - http://www.acs.org/content/acs/en.html?\_nfpb=true&\_pageLabel=PP\_SUPERARTICLE &node\_id=2119&use\_sec=false&sec\_url\_var=region1&\_\_uuid=6d53511f-6dcd-4cd2ad7a-305419371ed

[Science Magazine](http://www.sciencemag.org/)  - http://www.sciencemag.org/

[National Geographic](http://www.nationalgeographic.com/) - http://www.nationalgeographic.com/

[Nature Magazine](http://www.nature.com/nature/index.html) - http://www.nature.com/nature/index.html

 [Smithsonian Science](http://www.smithsonianmag.com/science-nature/) - http://www.smithsonianmag.com/ist/?next=/science-nature

Possible research topics:

Current and future treatments for malaria

Lithium batteries and beyond

Global Warming

Current Nuclear weapons

Radioisotope thermoelectric generators

Robotwar strategy and design

Current and future status of autonomous vehicles

The chemistry of baseball bats: designing the ultimate bat.

Cannabinoid chemistry and biochemistry

Host-guest complexes

Current status of the nanocar

Mathematical equations used in ap chemistry

The chemistry of jambalaya/creole chemistry

The chemistry of hot chili peppers

Pain chemistry

Synthetic diamonds

Isolation of caffeine: an improved lab for ap chemistry

Analysis of lipophilic extracts of green algae

Constituents of solidago

Improving prospects for chemists in cuba

Orbital hybridization is not a thing

An overview of chemical engineering

Understanding and teaching the Arrhenius equation

The ultimate iodine clock demonstration

The ultimate elephants toothpaste demonstration

The beauty and science of pH indicators

Attention deficit chemistry and societal issues

An introduction to cancer chemotherapy

Atomic scale microscopy of the surface of a mentos candy

Tetrafolium statistical occurrence, genetic explanation and constituents

History and future of nuclear fusion power generation

Limits of odor detection of \_\_\_\_\_\_\_\_\_

Video-based versus text-based learning

The chemistry of bug spray

Ok, next choose a title with a simple timeline and get it approved by me.

Title:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Timeline: All parts of this project are due on Monday June 10, at which time presentations may begin.

Noting that your project may (but is not required) to include real experiments, and that it must include a paper, presentation, and poster, create a weekly timeline to help keep you on track

Today’s Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Weeks remaining until June 10:

Week by week Timeline:

Approval Signature:\_\_\_\_\_\_\_\_\_\_

**Step 3: White Paper**

Once you have a topic chosen along with an approved timeline, you will then write a **White Paper** on your topic. This is a highly cited technical paper on your topic that is a minimum of five pages in length with copious supporting citations. Sufficient class time will be given to complete this task, and sample exemplary papers will be shown for inspiration and guidance.

 Now that you have a topic, you will need to be able to explain the science. For example, if you choose the topic “Development of the new super battery” be able to explain the old technology of how a battery works. Be able to explain how this new technology is improved and beneficial to society. Describe any hurdles, setbacks, personal opinions, competing ideas, companies interested, etc.

**Step 4: Poster**

Using Google Slides, Microsoft Powerpoint, or a similar program, create a one page slide that summarizes your project. This should be sufficiently detailed so that it may be blown up to a 3 foot by four foot poster. This generally requires a very small font and lots of zooming in. Having said that, make sure the poster is primarily graphics, not text, otherwise it will too boring.

Details and exemplary examples will be forthcoming. Use your white paper and create a highly-cited, graphics intensive, cool looking, and thought provoking poster. The best of these will be presented in the library and the display cabinets.

**Step 5: Presentations**

You will create a presentation to present to the class. This doubles as your final exam. You will be teaching the class about your topic and you will need to give a 10-15 minute presentation. Consider including in the presentation:

1. The actual current event or scientific development
2. The benefit to society, or problem alleviated
3. The science behind the development related to chemistry
4. Information on the specific general field. (For example if presenting on batteries talk about the companies involved, government programs, scientists, universities, economics, anything else that may be relevant to the topic)
5. Visuals. Although this must be a whiteboard-only presentation, you may hand out an outline, images, and you may show supporting videos if desired. You are encouraged to make this interactive with the class to spur interest: a demonstration,
6. Your own personal opinion on the subject. Do you think the ideas are beneficial or a waste of money? Is it possible? Etc.

**Grading:**

 The project will be worth 300 points. A rubric will be provided based on the following criteria:

Project title and timeline: 10 points

White paper: 90 points

Poster: 100 points

Presentations: 100 points