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Hydrocarbon Reaction Experiment [Chemistry]

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SCC 110 Hydrocarbon Reaction Experiment

The Foundations of Chemistry SCC 110 course is required for LaGuardia's Health Sciences students interested in the Nursing, Dietetic Technician and Veterinary Technician programs. This course has been designated for the Inquiry and Problem Solving competency as well the Digital Communication ability. SCC 110 students will use SCC 110 lecture material and information in the SCC 110 lab manual to perform an electrophilic addition. Students will be able to correlate the organic theory concepts with the experiment by making physical observations (e.g., color changes) when carrying out the lab procedures. The student findings will be synthesized and expressed by making an in-class video and drawing the reaction using chemistry software. Students, who successfully complete the hydrocarbon reaction lab and produce a corresponding satisfactory digital media report, will ideally have engaged in the assignment for at least three hours in lab followed by an additional 2-3 hours completing the digital components of the lab. The assignment is worth 2.5% of the final grade and is at the midpoint in the core competency for health sciences. This lab assignment was developed in the CTL seminar- Pedagogy of the Digital Ability where assignments were devised in the seminar followed by revisions of the assignment in a charrette format.

The assignment will enable students to use digital media to explain complex chemistry concepts while improving digital literacy. In more detail, this is shown where SCC 110 students are asked to submit/upload a video of themselves performing an organic chemical reaction and providing audio commentary on the experimental observations with an explanation of the underlying chemistry principles. The second part of the assignment will entail students using chemistry software to draw out the chemical reaction from the lab and uploading the two digital media products in their ePortfolio. The crafted digital report addresses all four dimensions of the digital communication rubric with an emphasis on multimodal communication. It describes both on a macroscopic and microscopic level the step by step organic reaction of an alkene plus bromine to create a haloalkane. Students will be able to use appropriate scientific language to explain the reaction mechanism to the undergraduate scientific student community. The design of the experiment incorporates one of SCC 110's course objective, which is to "introduce students to concepts about chemical bonding."

SCC 110 – Lab 9 Experiment Hydrocarbon Assignment

This assignment provides the opportunity to produce persuasive communications using digital tools. Being well versed in digital literacy and specifically being able to communicate via digital media is important in most professions as the world is constantly evolving in the technology space.

For this lab

Video 1-You will video (using your cellphone) a short 3-4 minute clip of the alkene chemical reaction lab 9 experiment. The recording will occur while the group is conducting the experiment (in Real time!) using your cellphone. You will provide audio (and include close captioning) describing in words the chemical principles. This will be done during the experiment lab time. Before leaving the lab, ensure that your audio commentary can be heard.

The goal is to explain in words what chemical concepts are occurring while making your observations.

Observations to explain in the video:

1. What is an alkene and a bromine?
2. What are the chemical properties of alkene and bromine?
3. What product should be obtained when you mix the two compounds?
4. What physical observation did you see to confirm you obtained the product?
5. What type of organic chemistry reaction has taken place?

Once completed, for grading purposes the group will upload the video to your FYS ePortfolio and email me the link for grading. In your ePortfolio, create an SCC 110 tab and upload your video in this section.

Video 2-Using the free chemistry software program Chems sketch
(<http://www.acdlabs.com/resources/freeware/chemsketch/>)

You will draw the chemical reaction of: alkene + bromine \rightarrow ??????

You will video the construction of your reaction and post it on your ePortfolio (not just the final product) in the same section as your Video 1.

Below is a link to obtain a digital copy of the assignment as well as brief video instructions about the assignment:

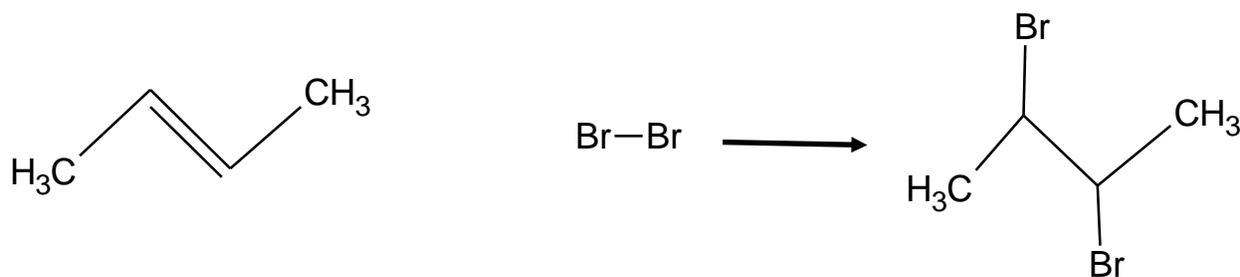
<https://lagcc-cuny.digication.com/scc-110-lab-9-hydrocarbon/home-1>

The following week, in lab class, we will view some of your work

Prelab question- Describe a situation you experienced where you mixed two substances (e.g., at home or work) and the initial substances changed physical properties once mixed together. Rationalize what caused the change on the molecular level

SCC 110- Reactions of Hydrocarbon lab-

“When bromine (Br_2) reacts with an alkene, the dark red color of the Br_2 disappears quickly as the atoms of bromine bond with the carbon atoms in the double bond. If the red color disappears rapidly, we know the compound contains an unsaturated site.”



Bromine reacts with alkanes by replacing an H with a Br. However, the reaction is slow and requires light. Then the red bromine color persists for several minutes before it fades. Aromatic compounds (benzene ring) are not reactive with bromine

Procedure for the Bromine test

Materials: 4 test tubes, test tube rack, dropper bottle of 1% bromine solution, cyclohexene and cyclohexane

Step 1. Place 15 drops of cyclohexane in a dry test tube

Step 2. Label test tubes

Step 3. Add 3-4 drops of the bromine solution and mix by shaking

Step 4. Observe whether the red color disappears immediately or not

Step 5. Hold test tubes to the light to check

Rubric for Hydrocarbon Lab SCC110

	Stupendous 4	Admirable 3	Acceptable 2	Unacceptable 1	Assessment
Critical thinking	Thoughtfully and accurately interprets chemical reaction, shows in-depth understanding of alkenes and bromines	Identifies relevant functional groups, relates results to chemical reaction	Little explanation to the observations	Misinterprets data, gives unjustified arguments. Chemical equation is not correct	
Quality of information	Covers topic thoroughly, includes details that support the topic	Includes essential information, includes some supporting details	Includes most essential information, details are somewhat sketchy	Lacks essential information	
Organization	Well organized and coherent, chemical mechanism is in logical sequence, includes clear introduction and conclusions to be expected from the reaction	Organized, some reaction steps are out of logical order, conclusions are generally clear	Some organization, reaction mechanism jump around, conclusions are unclear	Not organized, chemical mechanism is not logical	
Visual design	Visually appealing, clean simple layout, closed caption is easy to read, graphics enhance understanding of ideas	Visually attractive, closed caption cannot be viewed from distance, graphics and special effects do not distract from understanding ideas	Closed caption is sometimes hard to read, sometimes graphics or special effects distract from understanding	Closed caption is very difficult to read and does not follow narrative, layout is cluttered and confusing	
Oral component	Well prepared, speaks clearly, delivers with ease,	Engages audience, fluid delivery, uses different approach other than simply reading screen	Clear and understandable, uses limited delivery techniques	Not clear, not understandable	
Teamwork	Willingly accepts and fulfills individual role in group. Cohesion in video	Fulfills individual role within group without prompting. Video shows cooperation.	Works toward group goals with occasional prompting, maintains positive attitude. Video conveys basic concepts	Works toward group goals only when prompted, needs occasional reminders to be sensitive to others. Video appears disorganized	
				Total	