

Jewelry Design Project

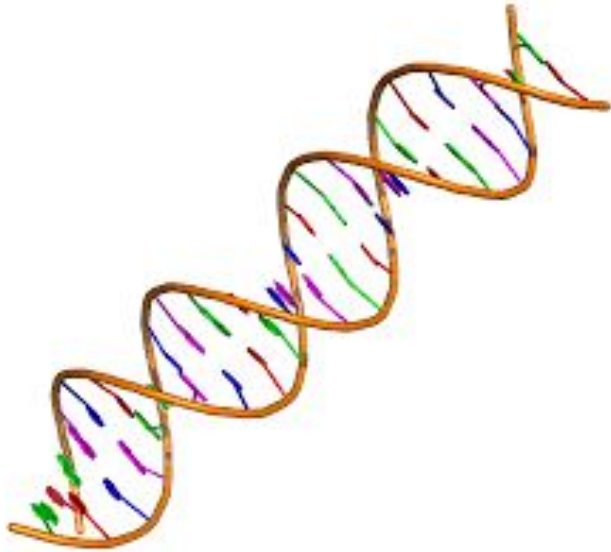


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Advanced Computer-Aided Design
2019

Introduction

The main goal of this project is to work on unique and detailed modeling techniques that can be found in many pieces of jewelry in the real world. This assignment calls for not only a unique model, but also cost, appearance, and overall functionality. SolidWorks will be the CAD software used for this project. The “Best 3D Design” Award will be given at the end of the final submission.

Research



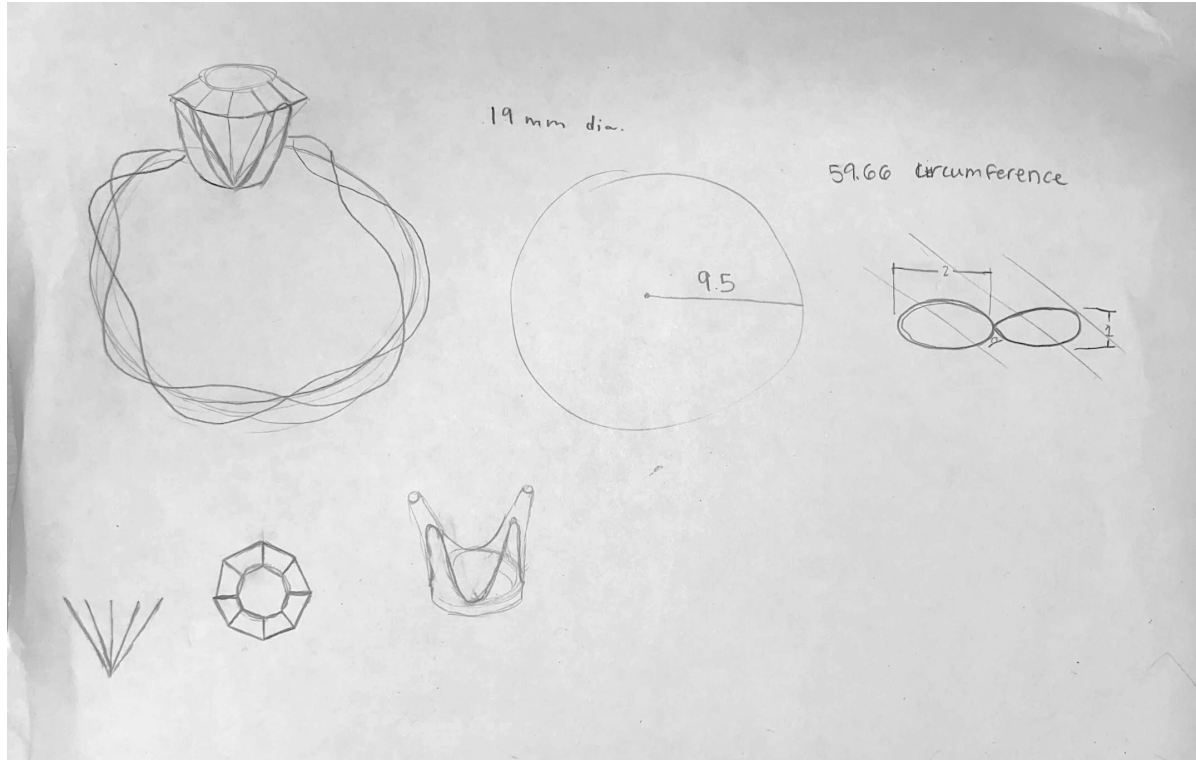
Double Helix



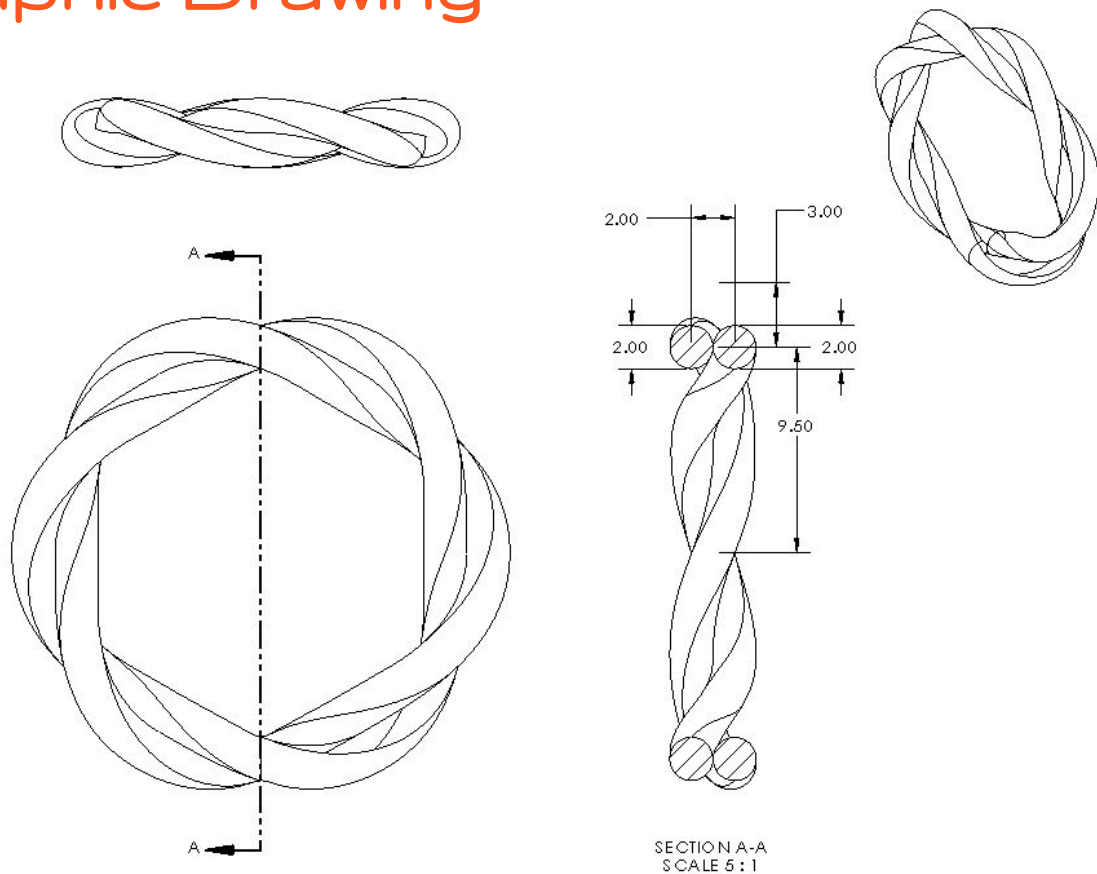
Research



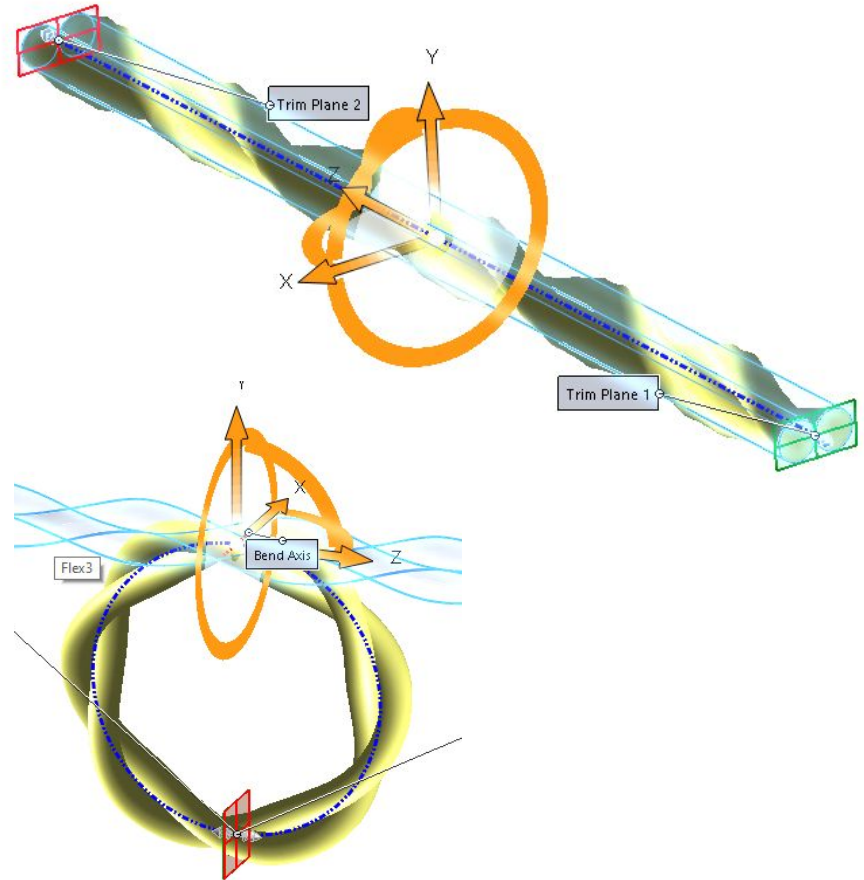
Concept Sketches



Orthographic Drawing



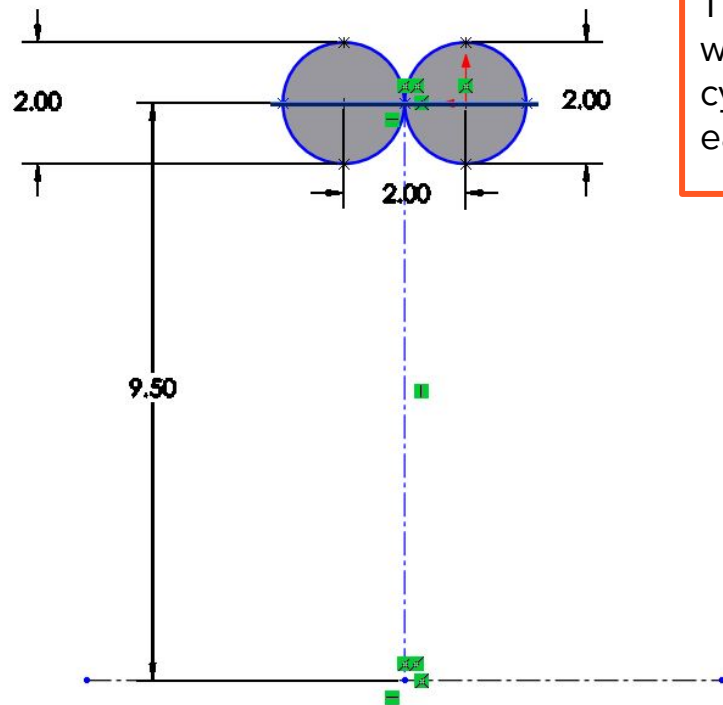
SolidWorks Models



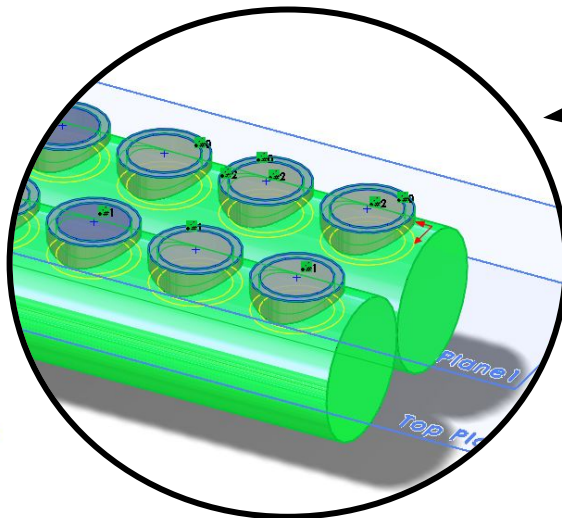
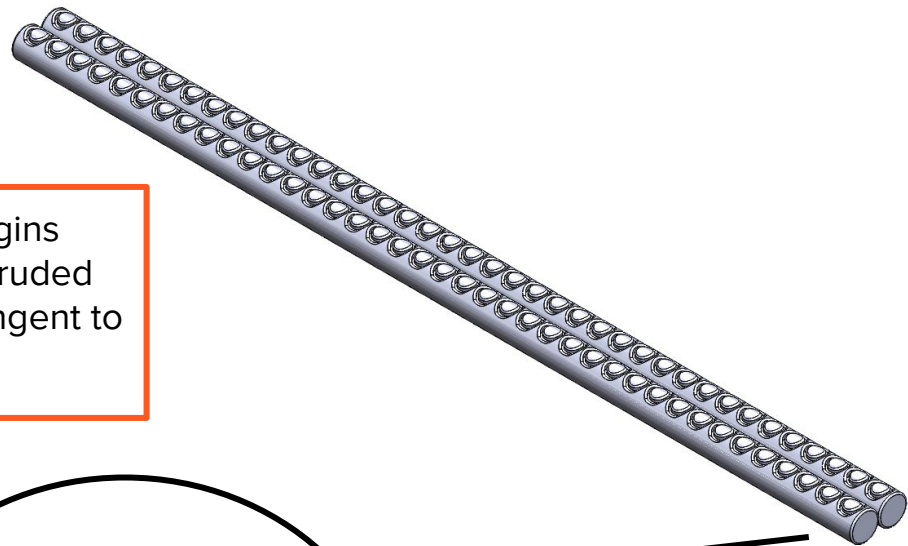
Submission 2

Feature Builds

Sketches & Extruded Cuts



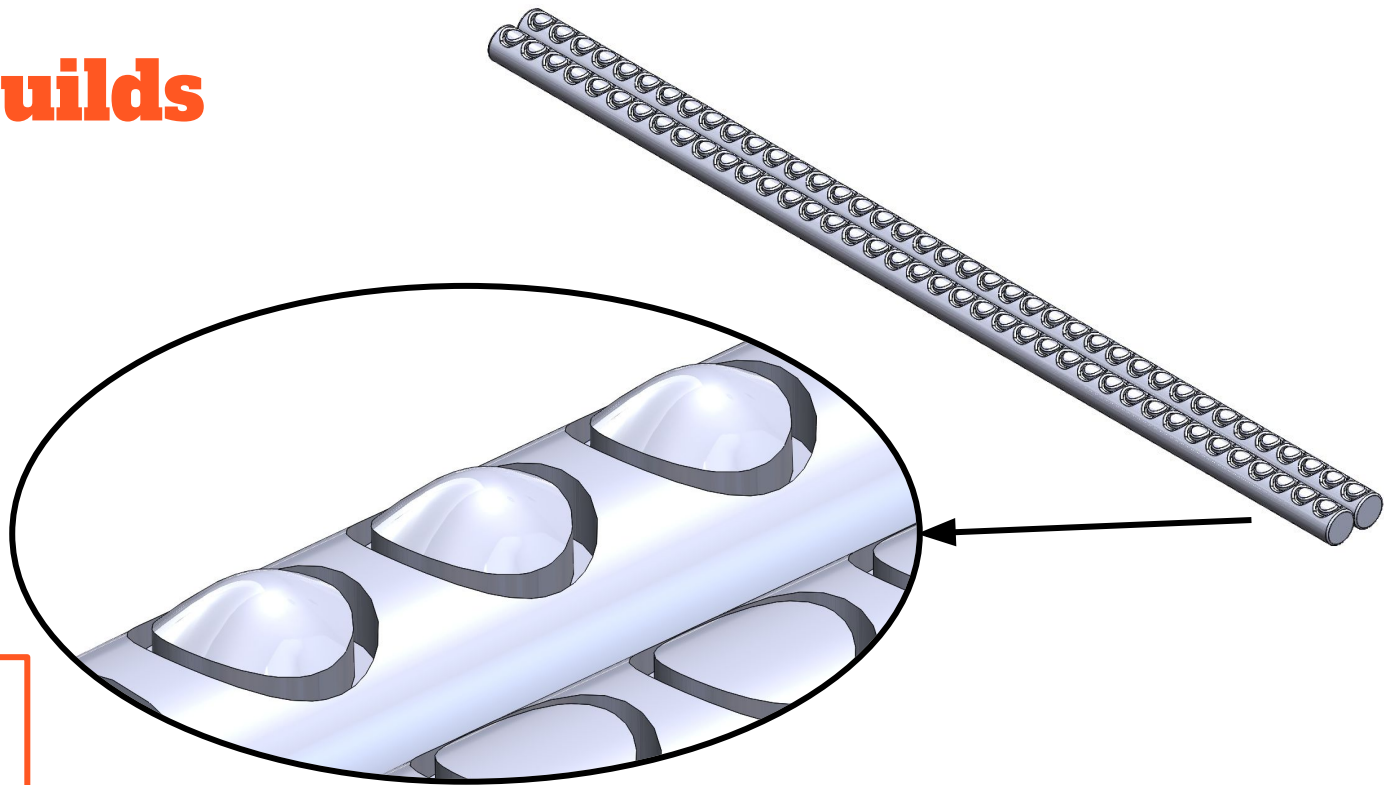
This ring begins with two extruded cylinders tangent to each other.



An extruded cut was made alongside a linear sketch pattern to efficiently create the shape of the gem across the entirety of the ring.

Feature Builds

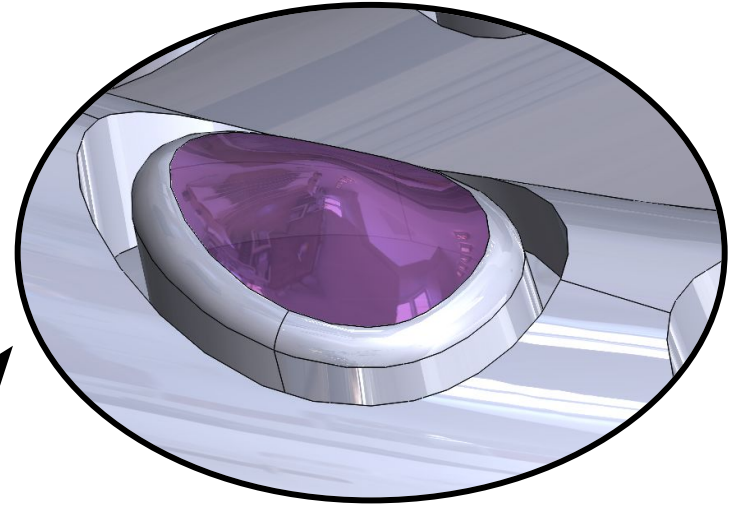
Dome Command



As with most gems, they are not perfectly flat. To account for their natural roundness, I used the Dome Command to accentuate the gem's prescence.

Feature Builds

Flex Command & Amethyst appearance



Seen here is the final shape that the ring will take. After two flex commands (1 - twist, 2 - bend), one can notice the resemblance of a double helix. Later, more appearances will be added to simulate a strand of DNA in the form of jewelry. I also played with the transparency of the amethyst appearance to stand out more for rendering purposes.

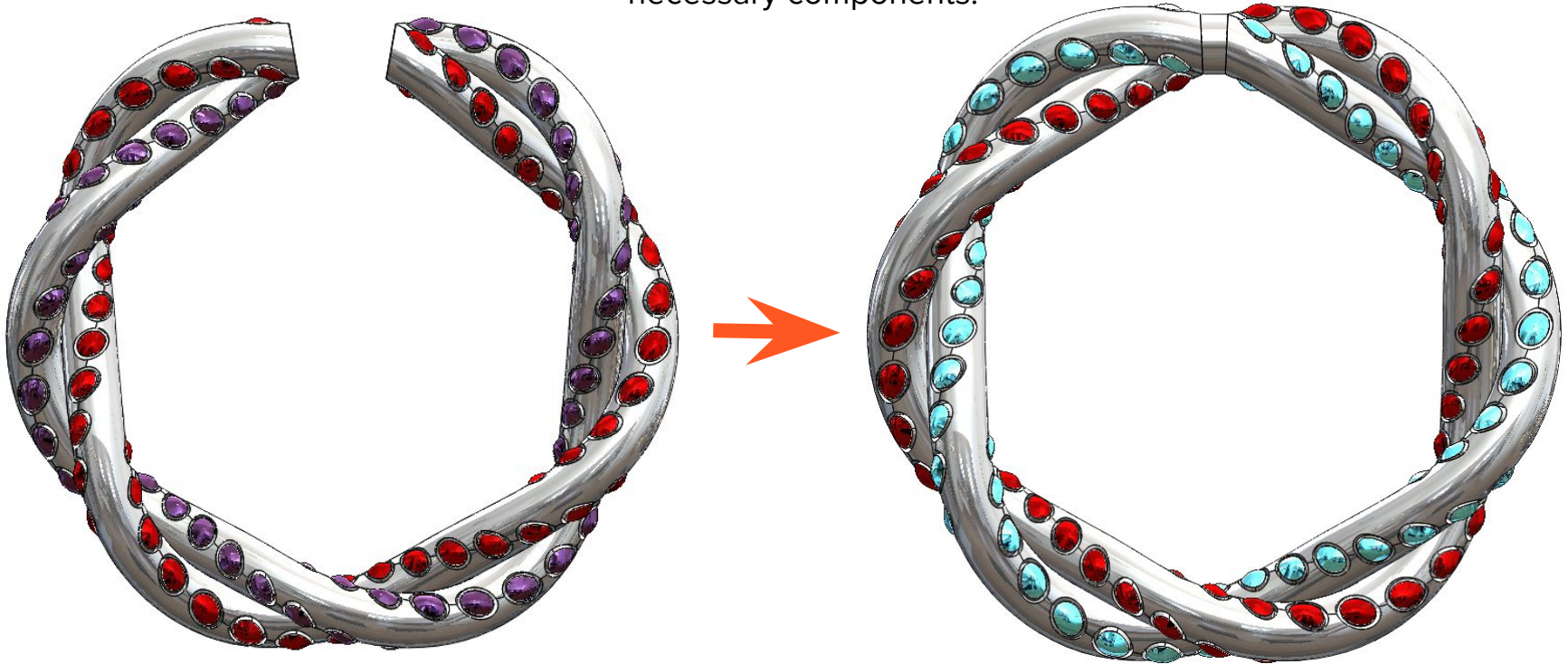
Goals 3/3/20

- Increase number of gems along the twisted ring
- Develop a smooth diamond holder that would accent the beauty of the diamond
- Possibly only have the upper half of the ring in a double helix. The bottom half would just be two untwisted cylinders
- Add appearances onto the final product
- Add more gems to the gaps seen on both rods.

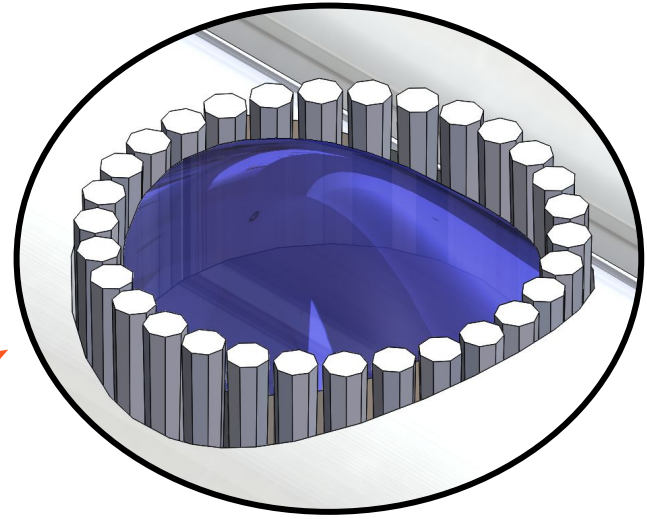
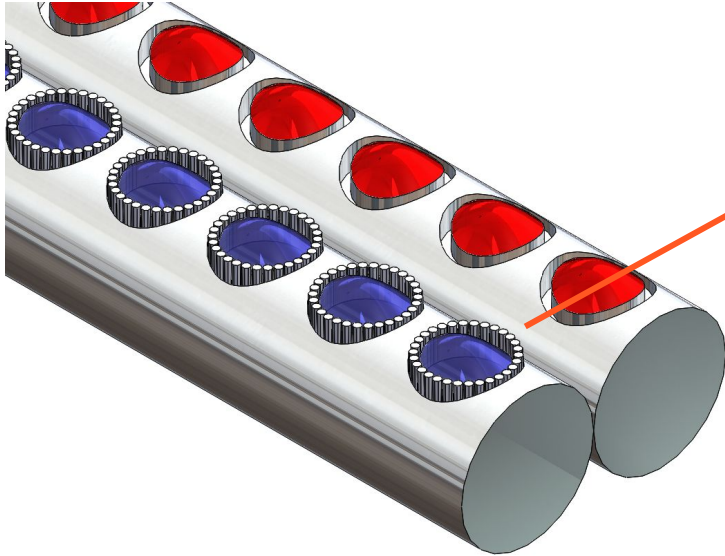
3rd Submission

Current Status

Over the course of these two weeks, there have been many setbacks and challenges in making my initial vision come to fruition. Currently, I am displaying the work I've completed thus far and will definitely submit the final submission with all necessary components.



Feature Builds



I originally decided to include these octagonal bosses into the gaps of each individual gem. This was going to fill in the gaps due to the extruded cut. After two weeks of testing, the computer I was using was taking much too long to apply to all four sides. I will keep working to include a design of this nature to the final renders.

Experimenting w/ various appearances



During the time spent working on the circular gem feature builds, I applied different appearances to the model and used render previews to see how different lighting settings would affect the final render. I, personally, prefer to have less transparent gems as it is able to reflect more light in the render preview. Though most rings are made out of steel/iron, I decided to give this model an aluminum appearance as it pops the most.



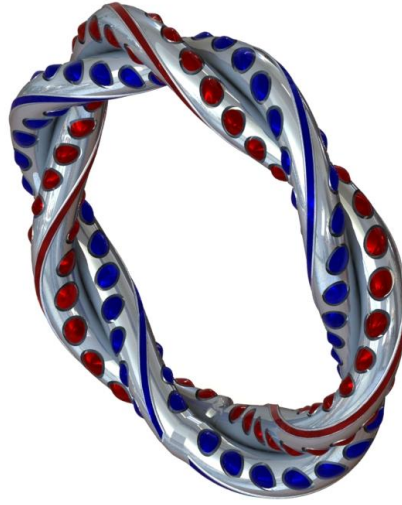
Goals 3/9/20

- Develop a smooth diamond holder that would accent the beauty of the diamond
- Add more gems to the gaps seen on both rods.
- Fuse the two ends together as there is little time to work more on the design.
- Begin to develop renders

Final Submission

Renderings

- Here are three different color schemes for the helix bracelet concept. My favorite of which being the colors of my high school and succeeding university - green and gold.



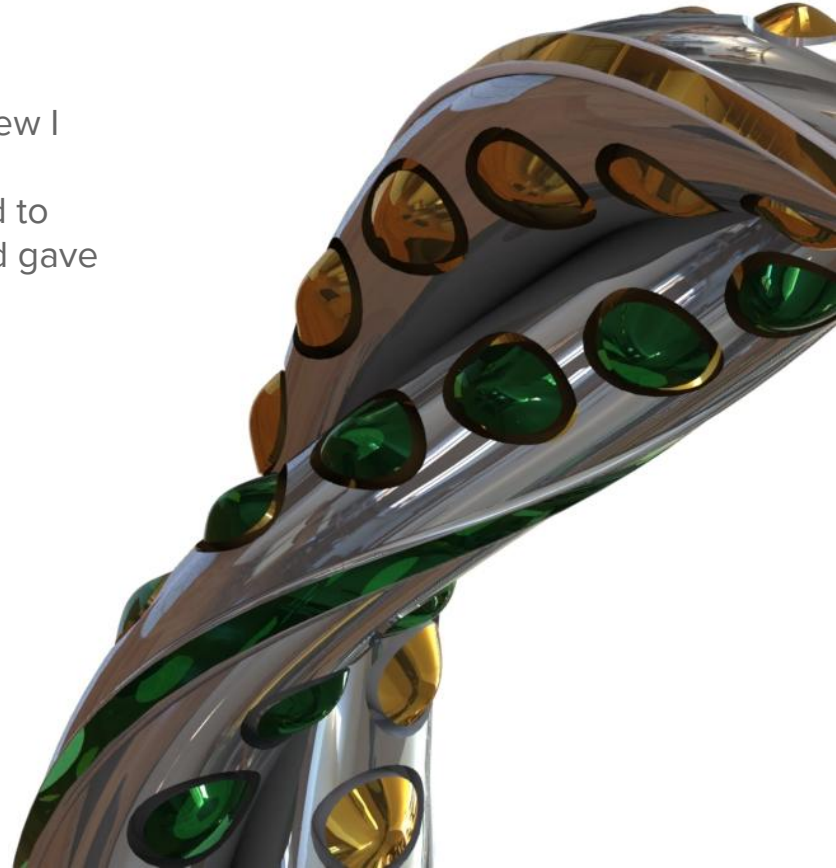
Detail - *soft edges*

- Notice how almost every surface features rounded edges with hardly any defined drop-offs.



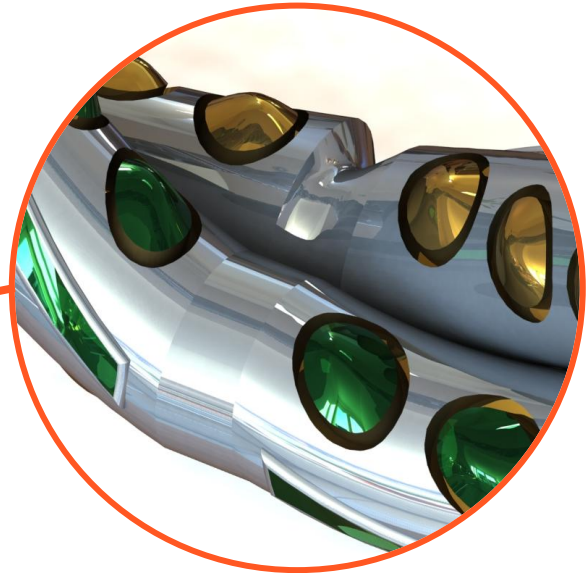
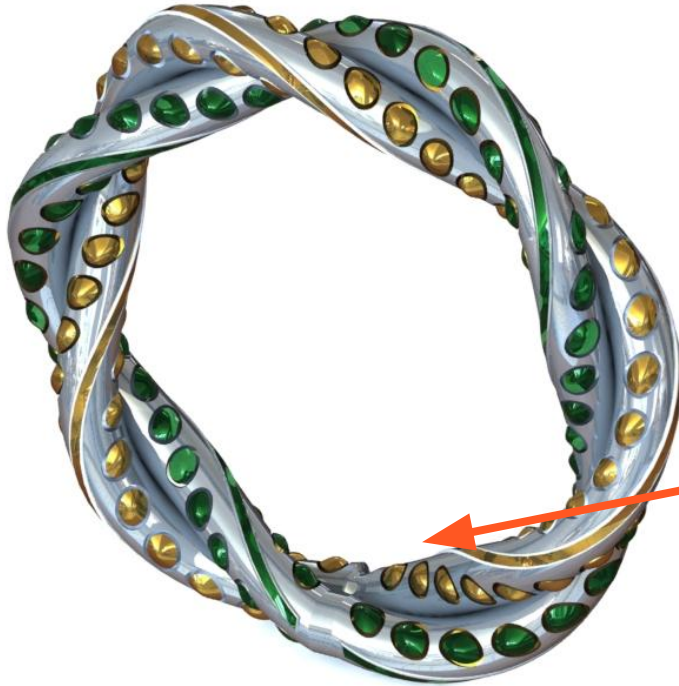
Detail - *color matching strip*

- To finish off the physical features of the ring itself, I knew I had to fill in this gap between each line of gemstones. Long, sleek, strip of the matching appearance seemed to nicely compliment the twisted nature of the model and gave well-needed sense of completeness.



Detail - *design limitations*

- Ideally, I wanted the whole ring itself to be continuous all the way around. Yet the flex command wouldn't allow the model to bend any further without producing an error message. Nevertheless, I was able to incorporate a loft joining each end.



On-wrist perspective



Conclusion

This project in particular has been a rollercoaster in regards to overall execution. The steps taken to achieve this design, on paper, are quite simple. Yet, the two flex commands essentially change the position of every point in the model. This complexity leads to much longer processing time and being prone to errors after the command is finished. Though I will say that I am proud of the final product's overall aesthetic and structure. I had planned on including octagonal bosses (slide 15) in the gaps between the gems and the body but my computer just wasn't able to process that much info into the final render. I'm still satisfied with the fact that I designed this model with my own originality. Overall, it's been a great year in ACAD just because I've learned so much and gained a great deal of knowledge into the 3D design process. I definitely would love to keep on improving on my skills and apply them in future endeavors as well.