**Day 3: Perceived (extrinsic) value versus intrinsic value of Gold - In-Class Activity**

**Group #: \_\_\_ Group Names:**

**Pre-Class Assignments:** Gold video, nanomaterials homework assignment

**Societal Concept:** Materials have intrinsic physical properties, only some of which are selected as more relevant in shaping society based on cultural perspectives. A material’s use can change.

Value is a social concept that is assigned to a material based on many factors. Materials have intrinsic physical properties, only some of which are selected as more relevant by a society in meeting social needs based on cultural perspectives. But, a material’s use can change and this can affect its financial value.

In small groups, collect your responses to the following questions.

*Please make sure to answer these questions in order, beginning with #1.*

1. We consider gold to be valuable because it is has a unique set of physical properties. List in order what you consider to be the top 6 properties that most influence its value in your opinion.
2. What is the current value of an ounce of gold? How would you think the advent of an engineering application (e.g. gold particles for nanomedicine) of gold might affect its financial value? Explain your opinion.
3. If a typical dose of gold nanoparticles is 2 milligrams/kilogram of body weight and the average person weigh 150 lbs. How much gold is in a typical dose of cancer treatment? If the shot costs $800, what percent of the cost is associated with the cost of the gold?
4. Give a rough estimate of the percentage of the world’s production of gold that could go into nanomedicine if it’s completely adopted in the US to treat pancreatic cancer. (You will need to figure out how many people have the cancer you are treating and assume some arbitrary number of treatments per year, say 10, as well as locate information on the average yearly production of gold.) Now that you’ve done the math, do you think this will measurably impact the financial value (or cost) of gold? Explain.
5. So you are the president of a company and your scientists have come up with two possible solutions for a cancer treatment. One uses Tantalum nanoparticles and one uses Gold nanoparticles and they both had the same effectiveness which one would you choose and why?
6. What considerations related to the operational chain involved in gold e.g. gold’s mining, pollution, trade, recyclability etc. might impact its perceived value

Grading Rubric. Your grade for the activity will be determined from the following criteria (max 5 points):

5= Responses are appropriate, comprehensive, and indicate thoughtful engagement with the information and concepts from the lecture, readings, and videos. Novel ideas, creativity, and attention to complexity are a plus.

4= Good effort. Responses and arguments are not as clearly presented, or as comprehensive and thoughtful as in a full credit answer.

3= Responses are less appropriate to the assignment, less thoughtful and engaged, with less complete information. Errors in grammar, punctuation and or sentence structure will also result in loss of points.

2= Responses are incomplete, showing little effort, thought, or use of preparatory materials.

1= Responses are not consistent with preparatory materials. Assignment is badly incomplete. Next to no effort.