Activity 4:
Nano Benefits

Key Concept:
Nanotechnology has been used to create many products that are smaller, lighter, and more effective than products made from larger materials.

Class time required:
Approximately 20 minutes of class time to introduce the activity. At least 30 minutes for students to do computer research—this may be continued at home. At least 30 minutes to make posters—this may be continued at home. Class time should be provided for students to present their posters to their classmates.

Teacher Provides:
• A copy of student handout “Nano Benefits” (4 pages) for each student or for each team of students.
• Access to computers with Internet and to printers (color if possible).
• Blank paper for making posters—card stock is ideal but regular printer paper will do.
• Tape
• Scissors
• Glue

Suggested Class Procedure:
• Distribute copies of “Nano Benefits” to each student or each team of students.
• Read the first page. Direct students’ attention to the poster template and the scoring guide.
• Direct students’ attention to the category assignment list. There are 11 categories on this list.
• Assign categories to individual students or teams. Students should record the number and the title of their assigned category on their handout. Consider:
  o Random assignment: Students draw a numbered slip of paper with the number of their assigned category on it.
  o Selective assignment: Assign easier topics to less able students and more challenging topics to advanced students.
• Students may work individually or in teams. If students are working in teams, ask students to move to work in a team with other students who drew the same number.

• Allow at least 30 minutes for students to work individually or in teams to visit the websites suggested in the student instructions to obtain information about products related to their assigned category. Stress the importance of recording the source of information (URL) for each product. IMPORTANT: Some of your students may need assistance with exploring the websites. Allow at least some class time so that you can provide initial support and assistance as students begin exploring the websites.

• Allow at least 30 minutes for students to work individually or in teams create their poster pages. Ideally students could do this using word processing software, but accept hand written posters if you cannot provide computer access for this.

• Arrange for students to hang their posters in the classroom or in another area of the school. Allow time for students to do a “gallery walk” in which they view their classmates’ posters and add a “Post It” notes with one thing they found interesting on each poster. Or use the “Peer Review of Nano Benefits Posters” form is included for teachers who would like to have their students peer review the posters.

**Sample Posters**

*Photo courtesy of Rosalie Zonder, Our Lady Mercy School*

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Nano Benefits

Nanotechnology has great potential for making our lives healthier and more convenient. While most people think of nanotechnology products as things of the future, new “nanotech” products are currently being used in millions of homes. Many people are probably not even aware of many of the products that include nanoparticles.

Your class will develop a series of posters that could be used to make people in your community aware of the different types of nanotech products they may already be using. To share the work, each team in your class will be assigned a different product category to investigate.

Your team has been assigned product category:

# ______ Name of category ________________________________

You will be responsible for creating a poster that shows examples of three products in the category assigned to you. You should select products that are likely to be used by people in your community. Your poster should include the following information on three products:

- Names and pictures of the products
- The type of nanoparticles included in the products
- The advantages for use of nanoparticles in these products
- Source of information (URL)

Follow the guidelines on the poster template so that the class poster series will have a professional and consistent appearance. Also be certain to refer to the Scoring Guide for Nano Benefits Poster to be certain you understand how your poster will be graded.

To create your poster, you may find the following websites helpful.

http://www.nanotechproject.org/inventories/

http://understandingNano.com/Nanotech-applications.html
**Nano Benefits Poster Template**

Create your poster by taping 4 sheets of paper together. The tape should go on the back side of the poster.

**Nano Benefits**

**Your assigned nanotechnology category**

Team Member’s Names

This nanotechnology is great because:

- ..........................................................
- ..........................................................
- ..........................................................

**Source of information**

<table>
<thead>
<tr>
<th>Name of the product</th>
<th>Picture of the product</th>
</tr>
</thead>
<tbody>
<tr>
<td>The type of nanoparticles included in the product</td>
<td></td>
</tr>
<tr>
<td>The advantages for use of nanoparticles in these products</td>
<td></td>
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</tbody>
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# Scoring Guide for Nano Benefits Posters

<table>
<thead>
<tr>
<th></th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team made good use of class time</td>
<td>2 points</td>
</tr>
<tr>
<td>Team shared work fairly</td>
<td>2 points</td>
</tr>
<tr>
<td>Poster complete and handed in on due date</td>
<td>2 points</td>
</tr>
<tr>
<td>Proper poster format followed</td>
<td>2 points</td>
</tr>
<tr>
<td>Neat and visually appealing</td>
<td>2 points</td>
</tr>
<tr>
<td>Nanotechnology is great because….</td>
<td>2 points</td>
</tr>
<tr>
<td>Creative</td>
<td>2 points</td>
</tr>
<tr>
<td>Sources cited for each product</td>
<td>3 points</td>
</tr>
<tr>
<td>Pictures of products</td>
<td>3 points</td>
</tr>
<tr>
<td>Names of products</td>
<td>3 points</td>
</tr>
<tr>
<td>Particles in product</td>
<td>3 points</td>
</tr>
<tr>
<td>Advantages of use of nanoparticles</td>
<td>6 points</td>
</tr>
<tr>
<td>Total possible points</td>
<td>32 points</td>
</tr>
</tbody>
</table>

**Teacher Comments**
Nano Benefits Category Assignment List

1. **Appliances**  Batteries, Heating, Cooling and Air Conditioning, Large Kitchen Appliances, Laundry and Clothing Care

2. **Home and Garden**  Cleaning, Construction Materials, Home Furnishings, Luggage, Paint, Pets

3. **Electronics**  Audio, Cameras and Film, Computer Hardware, Display, Mobile Devices and Communications, Television, Video

4. **Food and Beverage**  Food ingredients, Cooking, Food Storage, Supplements

5. **Industrial Coatings**  Films, Protective coatings

6. **Goods for Children**  Childcare products, Toys and Games

7. **Health and Fitness**  Clothing, Cosmetics, Filtration, Personal Care, Sporting Goods, Sunscreen

8. **Automotive**  Exterior, Maintenance and Accessories, Watercraft

9. **Medicine**  Drug delivery, Therapy, Diagnostics, Imaging, Anti-microbials, Cell repair

10. **Energy**  Fuel Production, Fuel Cells, Solar Cells, Batteries

11. **Air and Water Quality**  Catalysts, Nano-structured membranes, Decontamination, Filtering
Peer Review of Nano Benefits Posters

Your name ___________________________________________________________

Who created the poster? ___________________________________________________________

Poster topic _____________________________________________

Directions: Rate each poster for the characteristics listed. Place an X on each line in the location that represents your rating.

Rating Scale
1 = Poor
3 = OK
5 = Excellent

Poster format was followed

Neat and visually appealing

Products selected were interesting

Product information is informative

What did you like best about this poster?

How might this poster be improved?