



2006 Project

What is Nanotechnology?

Nanotechnology is a new scientific frontier that will impact many facets of society, such as medicine, computers, and the environment. The nano world is 100,000 times smaller than the thickness of a single strand of hair. At the nano level, everything jumps and shakes – even solid things like tabletops. Imagine, the atoms that make up a solid object constantly move and vibrate!

Why Nanotechnology?

Nanotechnologists move atoms and molecules around to make amazing new discoveries. Scientists believe that someday nanotechnology will allow us to cure diseases using devices small enough to travel through the human body. Others believe nanotechnology will allow us to travel into space in an elevator using a system of tiny tubes and centrifugal force. Because of nanotechnology, right now you can buy things like stain-resistant clothes and bouncier tennis balls.

The Nano Quest robot game mission models represent just some of the technology and ideas that scientists are thinking about or working on right now. Through your Nano Quest project, you'll be asked to join the exploration of this new and fascinating world.

Nano Quest Project Summary

Project Selection: Explore a current or potential application of nanotechnology, either from the Nano Quest robot missions or from another source. Learn what scientists are facing in improving upon the existing application or making the potential application a reality. Design an improvement for the existing nanotechnology, or choose a potential application that faces a challenge and solve it. Share your findings with your community.

NOTE: Include all three parts of the project in the presentation in order to qualify for project awards at qualifying and championship tournaments:

- 1) Select a current or potential application of nanotechnology
- 2) Design a solution or improvement
- 3) Share your project with others

Its length should be no more than five minutes, including setup time

Team Project Guide

Join experts around the world, researching questions and creating new technologies that will make life better for everyone. This guide helps you get started and includes suggestions and tips to make the project steps easier to follow and complete. The Coaches' Handbook also has a helpful chapter on the project. And be sure to **look for the fun in everything you do.** (Marti Wolf, FLL Coach) **You'll be amazed at what you can achieve!**

1. Select a Project:

Choose a current or potential application of nanotechnology, either from the Nano Quest robot game missions or from another source. Explore this area and discover what scientists are currently learning about it. Find out what challenges they need to solve to improve upon existing technologies, or offer brand new ideas to make a potential application a reality. Be sure to focus your project on one improvement or solution.

You can learn more by communicating with experts in the field, such as nanotechnologists, physicists or computer technologists. Methods include:

- Email experts using “ask a scientist” web sites.
- Read what experts have written.
- Study design concepts that have already been created.
- Visit your local university science or engineering department.
- Visit web sites – some are listed on the Project Resources page found on the FLL international Web site (www.firstlegoleague.org).
- Check out books, magazines, newspapers, watch television, or visit libraries.

2. Design a Solution:

Design a solution to improve an existing nanotechnology or choose a potential application that has a challenge and design a solution to make it a reality. As you design your solution, think about these questions:

- What would its purpose be?
- What problem would it solve?
- What would it look like?
- How would it work?
- How would it affect the world around you?

Combine your research and your solution into a creative presentation for your community and the judges at your tournament. Its length should be no more than five minutes, including setup time. When your team practices your presentation, use a checklist to be sure you clearly communicate all three steps.

3. Share Your Project with Others:

Share your presentation with others to teach your community what you have learned about nanotechnology. This is also a great way for you to practice your presentation for the judges. Be sure your audience has the opportunity to ask you lots of questions. Sometimes the questions you are asked will help you refine your presentation.

Ideas for practicing and sharing your presentation with your community:

- Educate your school or classmates about your research.
- Share your findings with employees at a company interested in nanotechnology.
- Practice your presentation for family and friends of the team.
- Present it to your team sponsor(s) to thank them for their support.
- Share your ideas with your town council or other government officials.
- Create a web site and publicize it to others.
- Design a brochure, poster or storyboard that others can view.

Keep a list of the people who have seen or heard about your project, and include it in your presentation to the judges.