

NanoDays



NISE network
NANOSCALE INFORMAL SCIENCE EDUCATION



nisenet.org

Welcome, and thank you for helping out with our NanoDays event!



Presentation Overview

Intro to NanoDays

- NanoDays nationwide
- Our NanoDays event

Engaging the public in nano

- What is nano?
- NanoDays activities

I'll be introducing you to NanoDays as a nationwide event and going over some details of our specific event that you may find helpful in your role today. I'll also tell you a little bit about what nano is, and provide an overview of all the activities going on today.

NanoDays is...

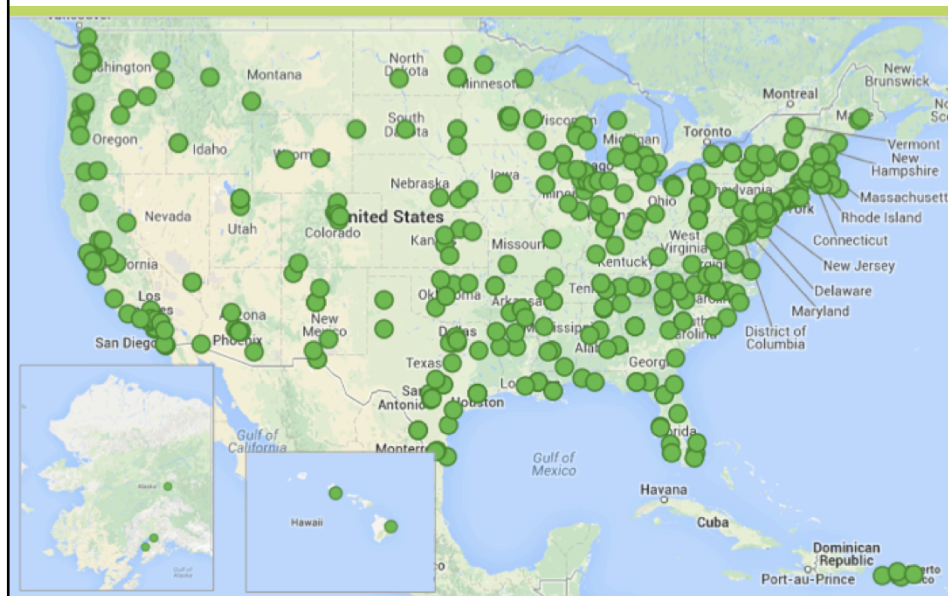


- a nationwide event celebrating nanoscale science and engineering
- organized by the Nanoscale Informal Science Education Network (NISE Net)
- held in all 50 states of the US, as well as other countries
- hosted at more than 250 sites each year
- enjoyed by over 470,000 participants annually

NanoDays is an opportunity to reach visitors with something that may be new to them.

(Quick overview of NanoDays as a national event, held in all 50 states, Puerto Rico and internationally, attended by as many as 470,000 people.)

NanoDays Sites (2008-2014)



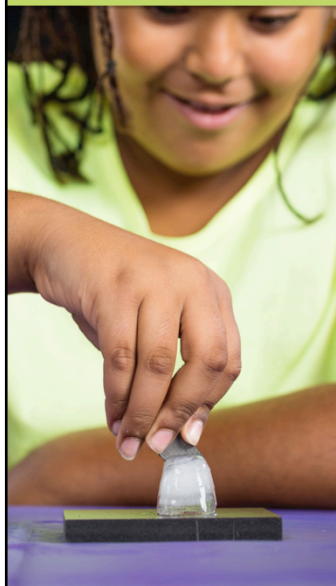
The dots on this map represent sites where NanoDays kits have been sent since 2008 (when NanoDays began). Over these past seven years 440 separate institutions across the US have hosted NanoDays events.

This year, 2015, NISE Net sent out 250 physical NanoDays kits.

By the end of this year, NanoDays materials will reach 7 million visitors:

- 1 million during NanoDays events
- 6 million outside of NanoDays events

NanoDays 2014 Evaluation



In 2014, the NISE Network conducted an evaluation of NanoDays events

- Data was gathered from adults, children, and volunteers attending NanoDays events
- 325 volunteers across the nation filled out a survey (if you filled out a survey last year—THANK YOU for your help!)

The following couple slides share a few of the main findings from the summative evaluation study of NanoDays events during 2014.

Evaluation Findings



Volunteers help make NanoDays engaging and educational for adults and children

- 63% of adult attendees report learning something at NanoDays that connects to an aspect of their own life
- 88% of children interviewed identified specific aspects of NanoDays activities when asked about new technologies

Volunteers help NanoDays have an impact on the public

Example quotes related to these findings:

Question asked of adults: Did anything that you learned today at NanoDays connect to an aspect of your own life? If yes, in what ways?

...I didn't know there was nano in our dollar bills. I thought it just read the numbers. [M, 43]

I could see how the one where you grind up an Alka Seltzer tablet for more surface area could be practical. [F, 30]

Did not realize nanotechnology is what is behind diapers... [M, 49]

Question asked of children: Did you hear about any new inventions today?

Never heard of memory metal before. [11-year-old]

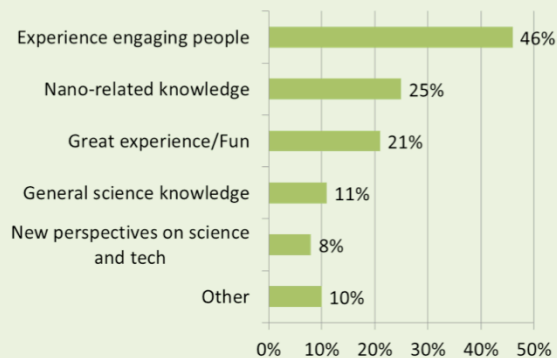
Solar panels, high-tech military clothes, space elevator. [9-year-old]

We're making man-made diamonds. [10-year-old]

Evaluation Findings

Volunteers are impacted by their NanoDays involvement in many ways

- When asked what they gained from their NanoDays volunteering experience, volunteers mentioned:



This graph shows several different areas where volunteers mentioned benefiting from their NanoDays volunteering experience.

The question volunteers responded to was: **“If a friend or colleague asked you what you have gained from your NanoDays volunteering experience overall, what would you say?”** The themes highlighted in this graph emerged from their responses to this question.

We hope you have a great NanoDays volunteering experience!

Our NanoDays Event



- Background
- Who's here
- Orientation
- Safety
- Policies
- Schedule



This is for information about your institution

Background:

(Your institution's) mission/ how long your institution has been hosting a NanoDays event.

Who's here:

Introduce guest speakers, volunteer groups and other participants.

Orientation, Safety, and Policies:

Where are restrooms, lunchrooms, and other places?

Where are the emergency exits?

Who should be contacted in case of emergency?

What do volunteers do if they have a problem? Who should be contacted?

Does your institution have procedures for fire alarms, lost children, and other emergencies?

Schedule:

Highlight the schedule for the day.

Are there special presentations? If so, where will they be held and at what time?

When does the NanoDays event begin and end?



Let's talk about what nano is and the activities at today's NanoDays event.

What is Nano?



Key concepts:

1. Nano is small and different.
2. Nano is studying and making tiny things.
3. Nano is new technologies.
4. Nano is part of our society and our future.

Nano is small and different. Nano is a prefix. A nanometer is very small. There are 1 billion nanometers in a meter. Nanoscale things often behave differently than larger things do.

Nano is studying and making tiny things. Scientists and engineers have formed the interdisciplinary field of nanotechnology by investigating properties and manipulating matter at the nanoscale.

Nano is new technologies. Nanoscale science, engineering, and technology lead to new knowledge and innovations that weren't possible before. Manipulating matter in different ways can lead to exciting breakthroughs in medicine, computing, energy and materials technologies.

Nano is part of our society and our future. Nanotechnologies have costs, risks, and benefits that affect our lives in ways we cannot always predict.

For more background information with key concepts for engaging the public in nanoscale science, engineering, and technology http://www.nisenet.org/catalog/tools_guides/engaging_public_nano

At this point, you may want to present the Intro to Nano video, "Nanotechnology: What's the Big Deal?" http://www.nisenet.org/catalog/media/intro_nano_video

NanoDays Kit Activities

Key concept 1: Nano is small and different.



There are a number of “Exploring” Activities at today’s event. While all the activities may deal with multiple key concepts, some of the Exploring Materials activities are designed to highlight key concept 1: Nano is small and different.

(This and the next few slides will list the activities included in the NanoDays 2015 kit.)

Training videos for each of these activities are available through NISE Net and can be found at the following links:

Exploring Materials—Stained-glass Windows: <https://vimeo.com/79517392>

Exploring Materials—Thin Films: <https://vimeo.com/79396069>

Exploring Materials—Graphene: <https://vimeo.com/79400721>

NanoDays Kit Activities

Key concept 2: Nano is studying and making tiny things.



Some of the Exploring Tools and Exploring Materials activities highlight key concept 2: Nano is studying and making tiny things.

Training videos for each of these activities are available through NISE Net and can be found at the following links:

Exploring Tools—Dress Up Like a Nanoscientist: <https://vimeo.com/79396065>

Exploring Materials—Polarizers: <https://vimeo.com/79396072>

Exploring Tools—Transmission Electron Microscopes: <https://vimeo.com/79396065>

NanoDays Kit Activities

Key concept 3: Nano is new technologies



Some of the Exploring Properties and Exploring Products activities highlight key concept 3: Nano is new technologies.

Training videos for each of these activities are available through NISE Net and can be found at the following links:

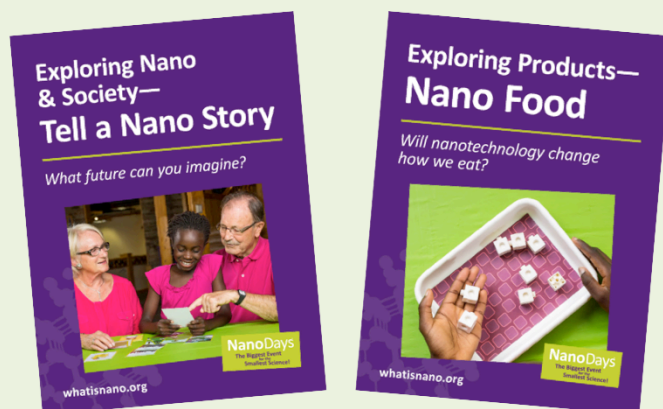
Exploring Products—Nano Fabrics: <https://vimeo.com/61240505>

Exploring Properties—Heat Transfer: <https://vimeo.com/79396067>

Exploring Products—Kinetic Sand: <https://vimeo.com/79396066>

NanoDays Kit Activities

Key concept 4: Nano is part of our society and our future



The Exploring Nano & Society and some Exploring Products activities highlight key concept 4: Nano is part of our society and our future.

Training videos for each of these activities are available through NISE Net and can be found at the following links:

Exploring Products—Nano Food: <https://vimeo.com/61299670>

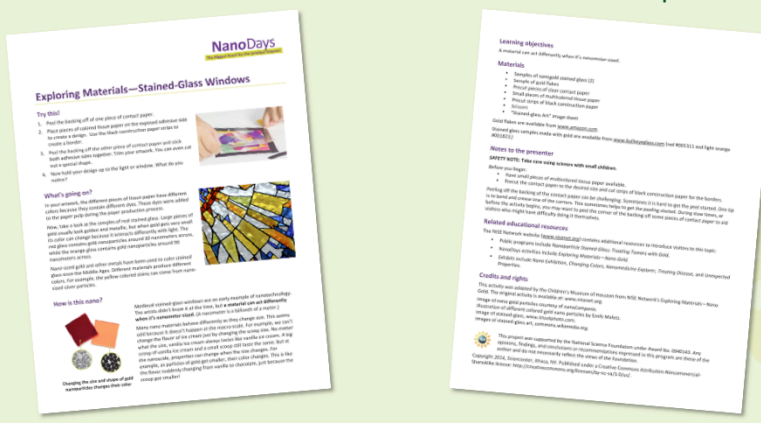
Exploring Nano & Society—Tell a Nano Story: <https://vimeo.com/61446567>

Inside the Box

Activity Guides

On the front:
Instructions for visitors

On the back:
Information for presenters



When you get to your station, you will find a box. Inside the box you will find all the materials you need to run one NanoDays activity. Each activity has a “guide” that has 2 sides. The “front” side should be placed facing visitors.

The front of all the guides is divided into three sections:

“Try This!” which gives the instructions for doing the activity

“What’s going on?” which explains what the visitor observed

“How is this nano?” which explains the nanoscale science and/or technology background for the activity

Read over the front of the guide before visitors arrive.

The guides also have a back side, including:

Learning objectives – tells you what visitors will hopefully learn from participating in the activity

Materials – Check that you have all the materials needed for the activity.

Notes to the presenter – These may help give you some hints to make the activity more successful

Some of the activities also include **Extensions** – which are extra activities that can be done.

Some activities also have additional sheets which have more background information or images to help in explaining the science behind the activity.

Other Materials

- Posters
- Signs
- Videos



There are also other sources of information about nano throughout the museum, which you might direct visitors to. These include educational posters, signs and videos.

Other Programming



There are lots of other activities happening here today. Some of the highlights are
(*add other programming here*)

(For ideas on other programming you can do at your NanoDays event refer to the Planning Guide in your kit or visit the NISE Net website at www.nisenet.org)

THANK YOU!

We couldn't do this without you!





This presentation is based on work supported by the National Science Foundation under Grant No. 0940143.

Any opinions, findings, and conclusions or recommendations expressed in this presentation are those of the author(s) and do not necessarily reflect the views of the Foundation.

