

## Entry for 2019 AIP Science Communication Awards

Category: Broadcast and New Media

Entry title: Interactive Neutron Science Exhibit

First use: April 2018 in Washington, DC, at a congressional event

**Current uses:** As a permanent exhibit (see photo at right) in the American Science and Energy Museum (Oak Ridge, TN) and as a traveling exhibit for STEM education by ORNL scientists and community outreach personnel.

## **General description of entry:** *The amateur video at the link below is intended only to show the ACTUAL entry in use.*\* The entry itself is an Interactive Neutron Science Exhibit offering multi-track, animated educational content with touchscreen functionality. The exhibit is designed



to educate users ages 10 and up in a fun and interactive manner by letting them select from ORNL's two world-class neutron sources and conduct neutron scattering "experiments" on different types of materials in up to 12 different areas of science.

Children and adults can both learn the basic concepts of how neutrons are used to study the properties of different types of materials and see examples of real-life success stories resulting from their make-believe experiments.

There is an optional audio description provided for vision-impaired users, per the Americans with Disabilities Act (ADA) and Section 508 guidelines.

\*Should this entry win an award, ORNL can supply a touchscreen for the event with cables to connect to a projection system for display on a large screen.

Link to online video of entry and PDF of entry description document:

https://neutrons.ornl.gov/content/entry-2019-aip-science-communication-awards

## **Miscellaneous Details:**

- Vendor charges totaled just under \$10K, excluding hardware and shipping case
- Project required over 15,000 lines of code
- Key information is provided visually, so no captioning is required per ADA / Section 508 guidelines
- Visually impaired users can plug their earbuds or headphones into an Audio Out jack to hear an audio description
- The presentation can easily be connected to most projection systems for display on larger screens
- The BrightSign unit running the presentation connects to most touchscreens and is the size of a hardback book
- BrightSign software is not HTML compatible, which is why the presentation can't run online or on computers
- Each of the 12 success stories that can display at the end of the presentation corresponds to the area of science chosen by the user at the start (see attached programming flowchart for details)
- "Hidden" PAUSE and PLAY buttons on some screens allow presenters to pause to add commentary or take questions
- To minimize programming costs, only six total animation sequences (3 speeds x 2 neutron sources) were allowed, so it was decided to hide each sample in a "neutron chamber" while the sample is in the beamline, which is what typically happens anyway during actual experiments
- Success stories are based on actual experiments conducted at one or both ORNL neutron sources
- Neutron science staff were consulted to ensure the accuracy of the animations and overall content
- The Department of Energy added the exhibit to the new AMSE museum after seeing an early version of the presentation
- Average observed user involvement by children and adults at the museum was nearly five minutes
- Plans include future updates to the programming to refresh the sample choices and corresponding success stories

## Oak Ridge National Laboratory Interactive Neutron Science Exhibit Programming



**Optional Audio Description:** available per the Americans with Disability Act (ADA) to verbally describe onscreen content and activity for the visually impaired. An Audio Out jack is provided for users to plug in their earbuds or headphones. No subtitles are required, since all important content is already displayed on the screen or via animations.

