Larry Bell
"Involving the public in science and engineering understanding and vision"

For organizations of informal science education, the challenges presented by the National Science Foundation in funding the Nanoscale Informal Science Education Network (0532536 & 0940143), included going beyond our familiar role in engaging visitors in fun hands-on science phenomena to stimulating interest in and a sense of relevance of research that seemed pretty abstract and disconnected from everyday experience, and to address implications of nanoscale research that raise issues of societal importance. Work started in the NISE Net project has now been carried forward into two related projects that bring similar challenges.

From the point of view of public perception, chemistry, while a long-established field, has similar engagement challenges as the key conceptual understanding lies at a scale that is not perceived directly and is abstract. The breadth of the field furthermore makes it difficult to associate with particular aspects of everyday life, except when particular applications make news because of their outstanding benefits or harm. The Research and Evaluation team at the Museum of Science developed a framework for stimulating public interest in chemistry, a sense of its relevance, and feelings of self-efficacy based upon research conducted in the NISE Net project and related literature. The *ChemAttitudes* project (1612482) is using design-based research techniques to refine the theoretical framework and create a kit of informal educational materials to distribute to 250 partners in the NISE Net and the American Chemical Society's National Chemistry Week network.

When NISE Net was first founded in 2005, there was concern about a potential public backlash against developing nanotechnologies because of the far-reaching, futuristic applications that were being imagined at that time. That same issue with even more immediacy has arisen in the context of the field of synthetic biology and the development of new gene editing techniques. The capacity for human genome editing seems surprisingly near. Stories are appearing regularly in the news and the National Academies issued a report earlier this year: "The emergence of CRISPR/Cas9 as a research tool in the area of human genome editing has lent new urgency to calls for a broad public dialogue about these technologies and their applications." The NAS report calls for "extensive and inclusive public participation …. developing the necessary content and communicating it effectively….and improving public engagement." NISE Net partners who developed dialogue programs in the NISE Net project, have expanded their work in partnership with the AAAS in the *Multi-Site Public Engagement with Science – Synthetic Biology* project (1421179) and have opened a dialogue with scientists and informal educators about topics and questions for expanded dialogue between scientists and public audiences.