

# NIST Combinatorial Methods Center

## Collaborating to Accelerate Materials Discovery

**S**peeding the pace of materials innovation is the goal of the Combinatorial Methods Center at the National Institute of Standards and Technology, the nation's leader in measurement science. Techniques for high-throughput screening and analysis already have revolutionized the process of discovery in the pharmaceutical industry. Now, NIST and its partners are refining and extending these "combinatorial methods" to make the search for advanced materials more efficient, more productive, and more cost effective.

The NIST Combinatorial Methods Center, or NCMC, presents a prime opportunity for companies, universities, and government laboratories to transform the way advanced materials are identified and developed. NCMC collaborators are making a break from the protracted practice of testing materials one at a time. They are developing integrated—and, often, automated—capabilities for exploring a wide range of characteristics in parallel and on a miniaturized scale.

These capabilities will enable researchers to quickly evaluate materials properties (such as thickness and composition) and processing conditions (such as temperature). At a rapid clip, they are able to

screen for materials optimized for applications in biomedicine, microelectronics, nanotechnology, and more. And with the quickly accumulating data, they can build predictive models that will further propel the quest for superior materials.

### What NIST Offers

An international leader in measurement matters and home to two Nobel Prize winners, NIST is a key component of the nation's science and technology infrastructure. The Institute's seven major laboratories supply research and services that underpin performance in the lab, factory, and beyond. Often, tests, measurements, and standards developed by NIST—usually in partnership with other organizations—are necessary to unlock the full potential of new discoveries and budding technologies.

Combinatorial methods are a textbook example. These emerging tools have the potential to speed the rate of innovation in many fields. In the diverse realm of materials, combinatorial methods hold promise for all classes and all specialty areas, from metals and intermetallics to polymers and polymer composites and from ceramics and biomaterials to fire retardants and adhesives.

The NCMC aims to develop measurement techniques and other vital tools needed to progress from tantalizing promise to tangible benefits in the pursuit of new materials.

