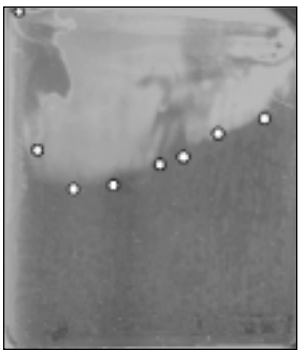
NIST already is a hub of research aimed at broadening combinatorial-method applications. More than 25 projects address hurdles that must be overcome so that high-throughput approaches can accelerate the pace of knowledge discovery. Topics include informatics (methods for generating, storing, retrieving, and sharing data), imaging technologies, and specific materials classes, formulations, and properties. Some examples:

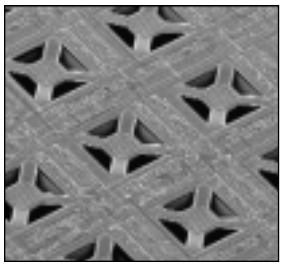
- Polymer blends, coatings, and films
- Thermal property screening
- Methods for building combinatorial libraries
- Fire retardants, adhesives, dielectric oxides
- Service life prediction
- Semicrystalline polymers
- Fluid properties microanalysis
- Microhotplate array platforms
- Laser scanning microscopy
- Infrared chemical imaging
- Polarized light scattering
- Modeling and characterization
- Biocompatibility assays
- Quantitative spectral imaging
- Chemical microscopy
- Data mining
- High throughput measurements

Emphasis on Collaboration

The NCMC is a vehicle for collaboration, the means to leverage personnel, facilities, and capabilities. Sharing of expertise, resources, and information reduces obstacles to participating in the fast-moving, instrument-intensive area of combinatorial materials science. Collaboration also encourages cross-fertilization of ideas and research strategies, which can lead to new insights and spur progress on many fronts—across organizations, disciplines, and interests.



Using a single sample, NCMC techniques yield a complete polymer-blend phase diagram that shows the influence of systematic changes in temperature and blend composition.



NIST-developed arrays of miniature hotplates enable parallel studies of tens to hundreds of samples. Each hotplate can be programmed and controlled independently.

Three levels of NCMC participation are offered. Prospective members can collaborate as participating members, in non-proprietary focused projects, and through cooperative research and development agreements that can address the treatment of proprietary information and the disposition of intellectual property stemming from joint research.

Semiannual NCMC meetings begin with open technical sessions devoted to new developments in combinatorial materials science. These are followed by members-only meetings that include short courses, workshops, and laboratory demonstrations. In addition, specialized meetings tailored to specific research objectives are organized for participants in NCMC projects.

NCMC members have access to data libraries and pre-prints of research papers. An on-line bulletin board supports discussions on topics important to the application and advancement of combinatorial methods.

For more information:

To learn more about the NIST Combinatorial Methods Center:

call: (301) 975-6488

write: Combinatorial Methods Center
NIST
100 Bureau Drive, MS 8542
Gaithersburg, MD 20899-8542

email: combi@nist.gov
or visit the NCMC web site at:
http://www.nist.gov/combi

The public web site offers overviews of the specific combinatorial methods research projects underway at NIST.