CCMR - Life Science and Medical Device Industries

Who we are

The Cornell Center for Materials Research (CCMR) is one of 29 centers funded by the National Science Foundation as part of the Materials Research Science and Engineering Centers (MRSEC) program. The mission of the CCMR is to advance, explore and exploit the science and engineering of advanced materials. Pursuit of this mission is carried out through fundamental experimentation, theoretical studies, K-12 educational outreach, and partnerships with industry. The mission of CCMR's Industrial Partnerships Program is to promote active cooperation between CCMR and industry to foster technology transfer, strengthen the links between university based research and its application, and promote economic development.

What we do

- Promote lasting beneficial interactions between Cornell researchers and industry.
- Partner with industry to develop products and services.
- Provide assistance tailored to entrepreneurs, early-stage "start-up" companies, and New York State small businesses.
- Encourage use of shared university resources and instrumentation.

How we do it

- Foster low-cost bench-to-bench collaborations with industry and Cornell researchers
- Administer a matching grant program called JumpStart, designed to help small NYS businesses solve concrete problems related to materials through collaborations with university experts.
- Sponsor workshops and meetings for entrepreneurs and startups such as the Pre-Seed Funding Workshops (PSW).
- Host workshops such as Facilities101, an in-depth introduction to shared instrumentation.

Selected opportunities for the life science and medical device industries:

Markets:	**Materials:**	**Methods:**	**Machines:**
Medical devices	Dyes	Material synthesis	Microscopes
Pharmaceuticals	Coatings	Material characterization	Spectrometers
Biomedical mechanics	Optics	Prototype development	X-Ray diffractometers
Nanobiotechnology	Nano-materials	Product improvement	Thermal analyzers
Diagnostics	Biological tissues	Product innovation	Mechanical analyzers

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Selected JumpStart success stories:

A company from Pittsford, NY, manufacturing hearing protection and headphone devices for the sporting and industrial safety markets worked with a faculty fromFiber Science and Apparel Design, to develop a method for evaluating the physical characteristics of the foam materials used in the ear cuffs of their products. The result was a hardware component built specifically to allow the comparison of new materials in an effort to improve product comfort.

A leading local manufacturer of optics and accessories for IR-UV-VIS spectroscopy engaged with a Cornell physics professor to develop a prototype shear/compression attachment that allows the user to examine biological tissues in response to applied forces using an optical microscope. This new product is currently being sold to organizations with interests in the physical properties of biological tissue; for example studying osteoarthritis.

A small New York City company working to improve the quality of life of visually impaired persons and their family members partnered with Cornell researchers in the Mechanical and Aerospace Engineering to demonstrate the feasibility of printing tactile labels on a variety of surfaces. Using Professor Hod Lipson's 3D printing machine, the company was able to successfully demonstrate the ability to print tactile labels on a variety of surfaces. The ultimate goal is to develop personal printing machines capable of reproducing the company's trademarked alphabet on everyday consumer items .

A small company from the heart of the Finger Lakes region of NY State required assistance in optimizing a saliva test for determining the presence of endometriosis based on a color response. A cellulose matrix contains a plant pigment. This pigment is commonly found in certain varieties of grapes grown in the region. When saliva is applied on the matrix, the pigment changes color if certain chemicals characterizing endometriosis are present. The company partnered with a research group in Biological and Environmental Engineering to develop the assay, optimize the pigment concentration and the matrix composition.

A NY State company specializing in the incubation and commercialization of new health care products approached Cornell with an idea to develop and commercialize a new wearable, lightweight garment capable of delivering the sensation of a light touch massage to the wearer using patterned electrical impulses or currents. Working with researchers in Electrical and Computer Engineering, a proof of concept prototype was developed and tested using a piezo-electric system that could deliver a light touch sensation in a patterned fashion across the entire back.