

CVIP

Commercial Ventures & Intellectual Property

UMass Lowell Novel Nano Technologies *Available for Licensing*

November, 2007

Bird's Eye View

[A Method for Nano Stamping](#)

[Nano-Heaters and Thermal Power](#)

[Selective Whole Cell Quartz Crystal Microbalance Biosensors](#)

[Synthesis of Water-Soluble Catechins](#)

[Nano-Dimensioned Emulsions for Edible Films](#)

[Protein Substrate for Immunosorbant Fluorescent Assay](#)

[Novel Catalyst for Cationic Polymerization](#)

Quick Links

[Prof. Joey Mead to present at the Nano and MicroTech Investor's Forum](#)

[UML Tech Search Engine](#)

Dear Susu,

Thank you for your interest in UMass Lowell's [nanotechnologies](#). UMass Lowell is a premier education institution with world class faculty that are focusing on developing innovative nanomanufacturing research. Here fundamental research is complemented by scientists and engineers with real-life manufacturing emphasis and expertise.

The mission of CVIP is to transfer the University's technologies to the marketplace. To that end, UMass Lowell is seeking partnerships with entrepreneurs and companies for commercialization and development of products. If you are interested, please contact us for more information. Below is a small sample of some of the promising technologies that are available for licensing. To see a full listing of our technologies, please visit the CVIP [website](#) or email us for more information.

Dec 3, 2007: Come and hear our latest nano research from Professors [Joey Mead](#) and [Sanjeev Manohar](#) at the [Nano and MicroTech Investors Forum](#) to be held on December 3, 2007 at the Marriott Boston Newton. (<http://www.mattcenter.org/nanomicro07/nanotech-07-conference.html>)

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Microcontact Printing Stamps and Methods For Their Preparation

Inventors: Joey Mead, Carol M. F. Barry, James E. Whitten, Sandip K. Sengupta, Amol Chandekar

A new faster, more accurate method of fabricating stamps is now available for licensing. Thermoplastic elastomer stamps for micro-contact printing are produced by using a commercial microinjection molder and a silicon mold. This breakthrough technology helps to reduce labor resources and time.

The versatile technology can be applied to any fabrication method, mold material or machine. Our patent-pending method of mold fabrication and the material used present significant advantages and the finished molds are very similar to the silicon 'masters' used in fabricating conventional micro-contact printing stamps.

For more information, visit our [Technology Search Engine](#) for this technology.

Nanoheater Elements, Systems and Methods of use thereof

Inventors: Julie Chen, Charalabos Doumanidis, Teiichi Ando and Claus Rebholz

Sources by Nanostructures For Thermal Power and Materials Processing

The nanoheater technology utilizes significant advances in nanoscience research to address the current technical constraints with thermal heating in nanomanufacturing. This technology enables local heat selectivity and time-exposure control. The selectivity and control of Nano-Heaters will lead to dramatic reduction in thermal budgets and superior processing quality in annealing, oxidation and chemical vapor deposition (CVD) of semiconductors and other materials. Up to now, the need for external connections with macroscale power supplies has negated many of the benefits of miniaturization.

For more information, please visit our [Search Engine](#) regarding this technology.



Selective Whole Cell Quartz Crystal Microbalance Biosensors

Inventors: Kenneth Marx, Susan Braunhut, Tiewan Zhou and Anne Montrone

Developed for use in cancer diagnosis, pathogen detection, cancer prognosis and clinical treatment management.



This unique device is capable of assaying and characterizing nanogram masses in rapid detection. Using this device, materials and a protocol have been developed to assay living biopsy cells that result in the diagnosis of malignancy, as well as quantifying the efficacy of various chemotherapies against malignant biopsy cells. The QCM has excellent repeatability for characterization of cells, using changes in the crystal oscillation frequency and changes in motional resistance. This patent pending invention has shown to be useful for diagnosis of biopsies, using as little as 2% of a typical needle biopsy.

For more information, visit our [search engine](#) for this technology.

Nanoemulsions Encapsulate Anti-Oxidant Synergy Formulation

Inventors: Robert Nicolosi and Tom Shea

ASF Nanoemulsions incapsulation for Cancer Therapy



This invention utilizes nanoemulsions as a mechanism for delivering therapeutic formulations for the treatment of cancerous tumors. An antioxidant synergy formulation has been developed (ASF) which efficiently prevents the proliferation of cancerous cells in cell cultures and encourages cell differentiation. Tests performed for this invention show that the nanoemulsion encapsulate ASF preparation, significantly increases such formulations efficacy in reducing tumor cell growth.

For more information, visit our [search engine](#) for this technology.

Synthesis of Water-Soluble Catechins

Inventors: Dr. Jayant Kumar, Susan Braunhut, Lynne A. Samuelson, Ferdinando F. Bruno, Subhalakshmi Nagarajan, Ramaswamy Nagarajan, Klaudia Gorski, Donna McIntosh

Catechins that capture powerful antioxidants in green tea for cancer therapy

Dr. Kumar and his research team have developed environmentally benign techniques in modifying an active component of green tea (EGCG -Epigallocatechin gallate) that makes it remarkably effective against cancer cells. The breakthrough of his research is the use of naturally occurring enzymes to "stitch together" green tea catechins-yielding polycatechins that are very effective in treating against breast cancer.

For more information, visit our [technology search engine](#) for this technology.

Nano-Dimensioned Emulsions for Edible Films

Inventor: Dr. Robert Nicolosi

Natural and edible films for food processing packaging

The food industry is making an effort to increase the "green factor" of their packaging, as consumer interest in health and wellness pertains both to the health value of the food as well as the environmental responsibility of the packaging. This invention involves a nanoemulsioned formulation of proteins, polysaccharides and lipids which can be sprayed to onto food to serve as an edible preservative packaging film. The rate of deterioration of food increases with increased oxygen and moisture diffusion of the packaging. The food processing and packaging sector is a major contributor to industrial waste, estimated by the EPA to be second only to the construction industry in waste generation, and this invention promises to reduce food packaging waste whilst promoting freshness.

For more information, visit our [technology search engine](#) for this technology.

Novel Polymer & Protein Substrate for Immunosorbant Fluorescent Assays

Inventors: Melisenda McDonald, Lisa-Jo Clarizia and Joey Mead

This innovative novel polymer-protein substrate is to be used for immunofluorescent assays. This system yields a four to six times increase in sensitivity over traditional polystyrene plates. We believe this system will allow detection of test articles at significantly lower concentrations than current high performance assays. Additionally, the advantage of this system is the capability of aligning capture antibodies while retaining their biological function making it an ideal application for use in miniaturized assays.



For more information, visit our [search engine](#) for this technology.

Novel Catalyst for Cationic Polymerization

Inventor: Rudolf Faust

Compositions and methods were developed for preparing living, cationic polymerization of olefins, including a unique mixture or a reaction product used as initiators. The researchers disclose a method for preparing a room temperature vulcanizable (RTV) polyisobutylene polymer having hydrolyzable silyl-functional groups positioned at or near molecular chain ends, prepared by a living polymerization in the presence of a Lewis acid.



For more information, visit our [search engine](#) for this technology.

If you are interested in any of the above technologies or general questions about our technology transfer commercialization program, please email us at susu_wong@uml.edu , 978-934-4700 or visit us at our [web site](#).

Sincerely,

Susu Wong and Paul Fredette
Commercial Ventures & Intellectual Property
University of Massachusetts Lowell

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