Submitted by: John P. Oliver, Vice President for Research

UNIVERSITY CONTRACT TO LICENSE TECHNOLOGY TO A COMPANY
OWNED BY COLLEGE OF ENGINEERING FACULTY

Recommendation

The Administration recommends the Board of Governors authorize the President or his designee to contract with NanoScienceEngineeringCorporation for exclusive license for commercialization the University’s interests in the intellectual property encompassing “System and Method of Delaminating a Layered Silicate Material by Supercritical Fluid Treatment” (WSU File No. 01-545); “System and Method of Preparing a Reinforced Polymer by Supercritical Fluid Treatment” (WSU File No. 01-546); “Method of Delaminating a Graphite Structure with a Coating Agent in Supercritical Fluid” (WSU File No. 03-636); and “Method of Delaminating Aggregated Particles with a Coating Agent in a Substantially Supercritical Fluid” (WSU File No. 04-681).

Background

Dr. Esin Gulari, Dr. Charles W. Manke, Dr. Gulay K. Serhatkulu and Dr. Rangaramanujam M. Kannan, all of the Department of Materials Science and Chemical Engineering, College of Engineering, collectively developed several technologies related to the production of novel nanocomposites, all involving the use of supercritical fluids. One method involves delaminating clay materials to use in formulating a reinforced polymer, resulting in a novel material having improved mechanical properties. A second method produces improved materials by delaminating layered silicate. Another approach involves delaminating a graphite structure with supercritical fluid treatment along with other chemical agents which results in a coating of the delaminated graphite structure, producing improved chemical, mechanical, electrical and fire retardancy properties. The fourth method involves exfoliating materials composed of aggregated particles (such as clays, nanotubes and whiskers) into polymers to produce new nanocomposites. The research which led to the development of these technologies was sponsored by the University, the National Science Foundation and Ford Motor Company (“Ford”). Ford is the co-owner of the two issued patents (6,469,073 and 6,753,360) which relate to delaminating layered silicate and clay materials to produce reinforced polymers. To our knowledge, Ford is not commercializing these technologies. Thus the University will grant a license to its interest in these patents. Two patent applications (including foreign counterparts) are pending for the other technologies; these patent applications are owned solely by the University.

Commercial interest in nanocomposites is high. While the compounds have been researched for over two decades, it is only recently that polymer producers have developed and commercialized nanocomposite-based products. Producers and compounders are actively searching for ways to expand the market for their products. However, access to and availability of formulation and process technology and market
application development are the critical obstacles facing nanocomposite commercialization.

Given the broad range of applications of the technologies, the need for flexibility in developing such applications and markets, and the need for the licensee to be exclusively focused on the technologies, the Technology Transfer Office will license the technologies to a start-up company. The University will, therefore, provide an exclusive, royalty-bearing license to NanoScienceEngineering Corporation, a new company established specifically to commercialize the technologies. NanoScience will provide both enhanced nanocomposite products, machinery to produce such products and production services.

NanoScienceEngineering Corporation was founded by David Burnett, co-founder and prior president and CEO of Prizmalite Industries, Inc. (manufacturers of microsphere particles for the pigments and materials industries), James Braddock, Sr., former head of purchasing for American Motors Company and Chrysler Corporation and former executive with Trelleborg Automotive (producer of rubber products), and Dr. Esin Gulari. The company will focus on the development of new nanocomposite materials, improving the efficiency of manufacturing processes for existing nanoclay and nanocomposite materials and developing new manufacturing technologies that use supercritical fluid methods of nanocomposite production. Industries in which NanoScience will compete include the automotive industry, packaging industry and consumer electronics industry. NanoScience will approach these industries from both the top-down strategy (interacting with end-user clients) and also the bottom-up strategy (interacting with suppliers.)

Michigan Conflict of Interest law requires specific sunshine procedures in order for a University employee, or a company owned by a University employee, to contract directly or indirectly with the University:

(A) The employee must disclose any pecuniary interest in the contract to the Board and the disclosure must be made a matter of record in the Board’s proceedings.

(B) The contract must be approved by a vote of not less than two-thirds of the full membership of the Board in open session.

(C) The Board’s minutes must report:

(i) The name of each party involved in the contract.

(ii) The terms of the contract, including duration, financial consideration between the parties, facilities or services of the public entity included in the contract, and the nature and degree of assignment of employees of the public entity for fulfillment of the contract.

(iii) The nature of any pecuniary interest.
If the Board approves this Recommendation, the minutes will report as follows:

The Board of Governors authorized the President, or his designee, to contract with NanoScienceEngineering Corporation, in which Prof. Esin Gulari, Prof. Charles Manke, Dr. Gulay K. Serhatkulu and Dr. Rangaramanujam M. Kannan will hold equity positions, to grant NanoScienceEngineering Corporation an exclusive license to the University intellectual property known as System and Method of Delaminating a Layered Silicate Material by Supercritical Fluid Treatment; System and Method of Preparing a Reinforced Polymer by Supercritical Fluid Treatment; Method of Delaminating a Graphite Structure with a Coating Agent in Supercritical Fluid; and Method of Delaminating Aggregated Particles with a Coating Agent in a Substantially Supercritical Fluid.

(i) The parties involved in the contract are Wayne State University and NanoScienceEngineering Corporation.

(ii) The contract will provide that:

(a) the duration of the contract will be for the life of the patents covering the technologies;

(b) financial consideration between the parties:

(1) Scope: Exclusive world-wide license, with the right to grant sublicenses.

(2) Field of Use: All fields.

(3) Royalty: 2% to 5% of revenue (depending on the products or services delivered) received by NanoScience, its affiliates and its sublicensees on sales of products or services utilizing licensed technologies.

(4) License Maintenance Fees: Commencing the calendar year following the third anniversary of the agreement or the first full calendar year following first commercial sale (which ever is earlier), fees shall begin at $25,000 and shall increase over time to $250,000 for the term of the agreement.

(5) Equity Participation: The University will receive 10% equity interest in NanoScience. This interest will be subject to pro-rata dilution for any future investment.

(6) Patent Fees: NanoScience will reimburse the University for its past patent expenses and all future patent expenses related to the licensed technologies.

(7) Retained Rights: The University retains ownership of all inventions and patents and may use the technologies internally for research and educational purposes.
(8) Other financial and legal terms consistent with standard University license agreements.

(c) No University facilities or services of the University are included in the contract.

(d) No University employees are assigned in connection with the contract.

(iii) Dr. Esin Gulari’s, Dr. Charles Manke’s, Dr. Gulay K. Serhatkulu’s and Dr. Rangaramanujam M. Kannan’s pecuniary interests consists collectively of 25% ownership of NanoScienceEngineeringCorporation and they will therefore have the potential to financially benefit from the commercial success of the company, including the commercialization of the University’s intellectual property known as System and Method of Delaminating a Layered Silicate Material by Supercritical Fluid Treatment; System and Method of Preparing a Reinforced Polymer by Supercritical Fluid Treatment; Method of Delaminating a Graphite Structure with a Coating Agent in Supercritical Fluid; and Method of Delaminating Aggregated Particles with a Coating Agent in a Substantially Supercritical Fluid.