

An initiative of the Thomas Walter Center

In conjunction with
The Office of Technology Transfer, Auburn University

Electro-Active Polymer Actuators and Sensors—a business plan

Summary

The objective of this business plan is to commercially develop actuators and sensors using a proprietary electro-active polymer (EAP) developed at the Ginn College of Engineering, Auburn University.

Electro-active polymers convert electric energy into mechanical motion. This modern-age, inexpensive material produces high-strain (i.e., high physical response) when electricity is passed through it. Its properties make this new material attractive to the actuators/sensors industry, which is worth about \$40 billion worldwide. Piezo-electric actuators and sensors are expected to reach \$10 billion sales by 2011. Auburn's EAP has properties superior to piezo-electric materials used in actuators and sensors applications.

Compared to piezo-electric materials, Auburn's EAP is: (1) light weight, (2) low cost, (3) high force per unit area—high on stiffness (850 MPa vs 0.2 to 700 MPa for other EAPs), (4) rapid response to input signal (a few milliseconds), (5) low in hysteresis loss and creep, (6) precision control to 4 micro-meter, (7) fit for micro-applications, (8) can hold induced displacement under continuous DC supply, and (9) fit for high frequency (> 1 kHz) applications.

Effort is underway in small startup companies to use this lightweight material in Micro-Electro-Mechanical Systems (MEMS) electromagnetic actuators, small motors, generators and sensors used in products ranging from automobiles to audio speakers. All these are potential applications for Auburn's EAP.

EAP-based products are on the verge of revolutionizing the field of electro-mechanical actuators and sensor industry because of their extraordinary performance and superior cost efficiencies. The business plan proposes to commercialize the new material to enter a product space with negligible competing EAP-based commercial products, and with only a few firms in the US using a similar material for commercial purposes. With thousands of potential applications, there is a wide open product space for newly developed products using the proprietary material.

This business could be funded by angel or venture capital funding agencies for two to three years to convert this material into commercially successful product lines. During the first three years, new products will be developed by this company using this proprietary material either for marketing by the company, or for licensing the products to others for royalty income. Seed funds could take several actuators and sensors for the automotive, camera, and defense applications can be taken to mass markets in two to three years. The inventor and his lab at Auburn University with relevant equipment valued at (\$2.5million) will be accessible to the new business based on this technology for a nominal fee.

For more information on the material, [click here](#).

If you desire a more detailed business plan, contact: swamidas@auburn.edu

(Information in this summary is subject to change)