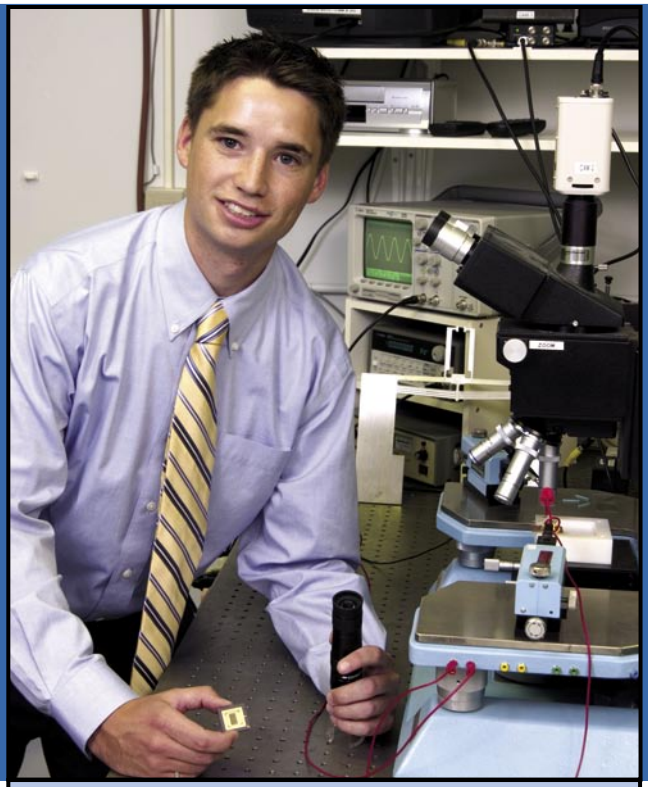
CMC MICROSYSTEMS IMPACT

Tiny Tweezers Offer New Flexibility in Biological Research

Early-stage research to improve cell manipulation has the potential to accelerate the detection and treatment of diseases, and improve in vitro fertilization techniques

"Without CMC's support in specialized MEMS manufacturing processes, our initial investigation into micro-tweezers would not have been possible. CMC's strategic partnership with Micralyne enabled access to industry-grade MEMS fabrication, allowing our team to produce micro-tweezers that can be used as off-chip micro-tools."

Jonathan Fraser, M.A.Sc.
Mechanical Engineering—MEMS Group
Dalhousie University



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Working under the supervision of Dr. Ted Hubbard, Professor of Mechanical Engineering, Mr. Fraser used MEMS technology to develop the tiny tweezers with potential for biomedical application. The innovative devices can isolate, clamp and manipulate cells, creating new opportunities to improve the detection and treatment of diseases such as cancer, West Nile Virus and SARS.

Current methods of cell manipulation typically rely on liquid mediums, while the micro-tweezers work best in dry environments. This leading-edge solution promises to provide physicians and biologists with alternative techniques for cell investigation and manipulation.

Many different biomedical applications can benefit from the new capabilities and flexibilities offered by these devices. Non-intrusive and highly portable because of their small size, the tweezers can hold a cell or bacteria sample without the use of electricity, allowing them to be easily transported to any biological subject 'in the field'.

Mr. Fraser highlights the ability of the tweezers to manipulate different sized 'objects' and to pluck cells in one continuous motion as key benefits of this innovation: "For example, relatively large cells such as embryos could be picked up and transferred in a non-destructive way for in vitro fertilization. Users can also adjust the range of motion and applied force of the tweezers depending on the desired application."

Future applications are not limited to the life sciences. This technology can be used anywhere that small particles need to be separated, removed or transported; for example, for the preservation of our food quality or the detection of pathogens in our environment. Dr. Hubbard's ultimate goal is to integrate the tweezers with other multi-technology components that the research team at Dalhousie is developing. He aims to create a complete testing system that is capable of grasping, transporting, separating and filtering samples. *cmc*