

Ultrasonically Actuated Needle Pump System



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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an ultrasonically actuated needle pump system that can be used to extract controlled amounts of fluid from areas such as interstitial spaces with minimal disruption to the body tissue.

OVERVIEW

Miniaturized needle systems that do not puncture capillaries are being developed in part due to problems that arise from repeat sampling, as in the case of blood sugar monitoring by diabetics. It has been shown previously that ultrasonically actuated, single needle devices will pump fluid from the distal to the proximal needle end. However, when these single-needle devices are inserted into the skin, vibrations on the needle are dampened, reducing the efficiency of fluid pumping.

THE INVENTION

UW-Madison researchers have developed a needle pump system composed of two needles – an outer, stationary tubular needle having a penetrating tip and a hollow bore, and an inner tubular needle that is mounted in the bore of the outer needle. The dimensions of the device are only 1.6 cm by 1.5 cm. The inner needle is ultrasonically vibrated by an ultrasonic actuator without vibrating the outer needle.

APPLICATIONS

- Extraction of small amounts of fluid
- Blood sugar monitoring

KEY BENEFITS

- The vibration of the inner tubular needle results in highly efficient pumping of fluid from the distal to the proximal end of the needle system.
- The outer needle shields the vibrating inner needle from contact with tissue so that the vibrations are not dampened.

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



- The device may also be used to pump fluid from a container at the distal end to an open proximal end to efficiently atomize liquid.
- This device could also be used to develop a significantly improved glucose monitor that would penetrate only 100 micrometers into the skin.

ADDITIONAL INFORMATION

Tech Fields

Medical Devices - Surgical devices

CONTACT INFORMATION

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845.

