

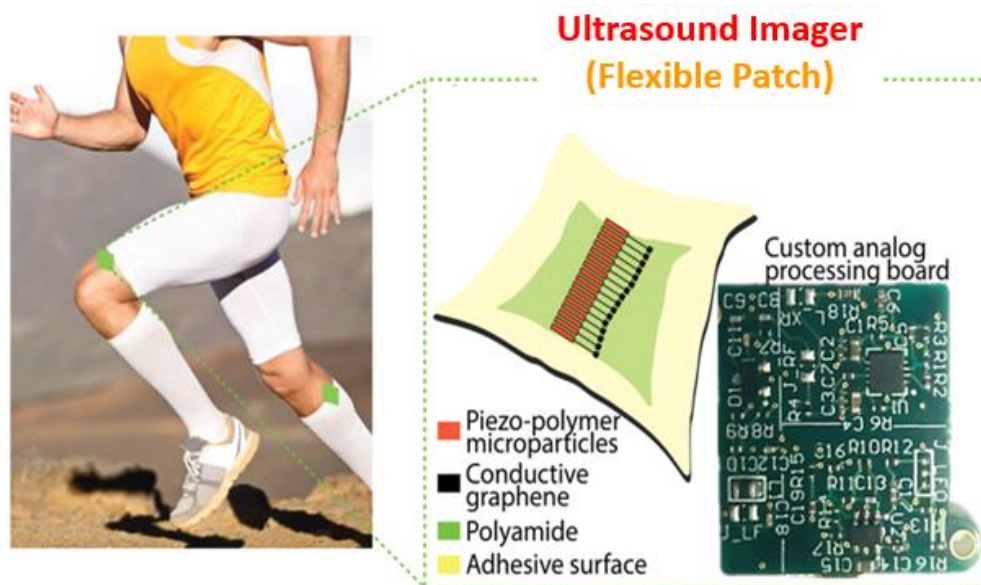
## Flexible Wearable Ultrasound Musculo-skeletal Imaging in Real-Time

This flexible wearable ultrasound imaging system performs dynamic monitoring of a patient's musculoskeletal tissue during physical activity. This is useful for clinical assessment of injuries. A flexible patch conformally attachable to a muscle region on the body includes an array of ultrasound transducers. The transducer array acquires images of the muscle region under the patch (e.g. on leg muscles, back muscles, arm muscles). The imaging system captures the dynamic evolution of the tissue during motion. The imaging system enables clinicians to evaluate the health status of musculoskeletal tissue and improve patient rehabilitation.

Following an injury, rehabilitation is improved by this dynamic imaging invention providing information about the musculoskeletal function during physical activity. This technology is a significant improvement over prior ultrasonography technologies which are limited by difficulties related to rigid form factor and operator dependence.

The ultrasound imaging array (flexible patch) is based on a novel type of transducers including conductive graphene micro-patterns. The patch adheres to the skin like a bandage and is operated using a portable, battery-powered imaging and control unit. This approach avoids many of the limitations of other imaging methods, such as surface electromyography (sEMG). This technology does this by spatially resolving individual muscles deep inside tissue and visualizing dynamic activity of different functional compartments.

Development Stage: **advanced prototype**



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