



## ACOUSTIC SUBWAVELENGTH IMAGING SYSTEM

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### Overview

Acoustic imaging plays a crucial role in various fields, including underwater sonar, nondestructive testing, and biomedical imaging. Ultrasound imaging, in particular, is widely used in medical diagnoses due to its non-invasive nature and real-time imaging capability. The resolution of conventional acoustic imaging systems is inherently constrained by the diffraction limit being a function of the wavelength of the acoustic signal, a fundamental physical limitation to all wave-based imaging technologies, such as in optical, microwave, thermal, photoacoustic, and acoustic imaging. While shorter wavelength acoustic signals produce better resolution, they typically suffer from shorter penetration depth. Therefore, there has been significant interest in developing far-field subwavelength imaging techniques.

### The Invention

UW researchers have developed an acoustic imaging system that can resolve object features substantially smaller than the point spread function of the imaging system. It provides a subwavelength acoustic imaging system that employs "blind" scatterers, that is scattering structures having a changing unknown position. This makes the imaging technique practical, for example, for biomedical imaging, where the scatterers can be microbubbles or the like injected into a blood vessel to be imaged. the invention provides an acoustic imaging device for subwavelength imaging of an object within a set of scattering elements with subwavelength dimensions.

### Additional Information

#### For More Information About the Inventors

- [Chu Ma](#)

#### Tech Fields

- [Medical Imaging : Ultrasound](#)

For current licensing status, please contact Michael Carey at [mcarey@warf.org](mailto:mcarey@warf.org) or 608-960-9867