Ultrasonic Imaging of Electromagnetic Effects with ASEM

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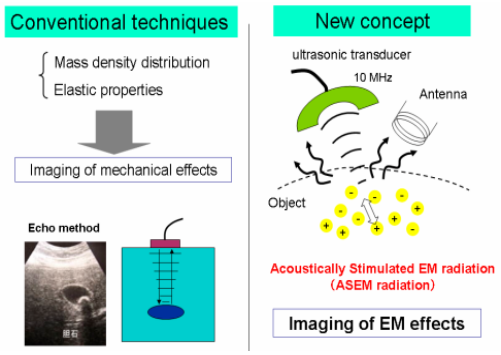
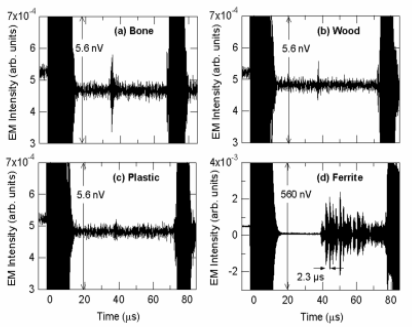
1. Technology Overview

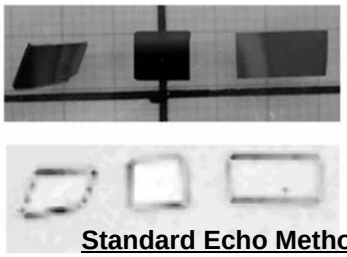
- Ultrasonic imaging technique is widely applied as noninvasive probe to human bodies and material structures. However, the majority of existing applications are restricted to diagnosing elastic properties of the targets, viz., electromagnetic properties are not probed. We propose and demonstrate a distinguishing method of probing electromagnetic properties of matters via **Acoustically Stimulated ElectroMagnetic radiation (ASEM)** .



Ultrasonic Technique

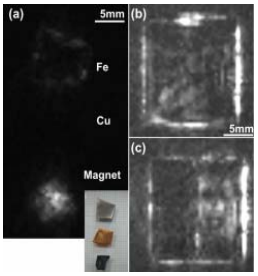


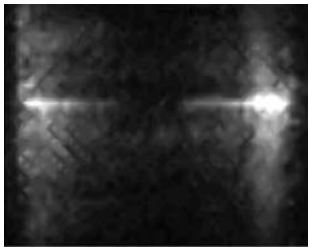
ASEM from a variety of matters



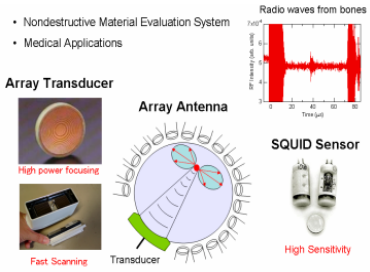
Standard Echo Method

ASEM Method

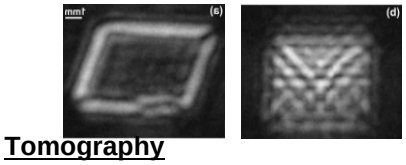




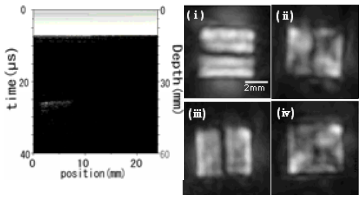
Magnetic Imaging through Ultrasound Waves



Potential Applications



Tomography



Piezoelectric Imaging

2. Benefits

- Electric or magnetic properties of matters can be imaged with ultrasonic techniques.

3. Market Potential / Applications

- Nondestructive material evaluation system particularly for analysis of piezoelectric/magnetic materials. Magnetic imaging through ultrasound waves might be useful for embrittlement inspection of metal structures such as nuclear reactor pressure vessels or aircrafts. Owing to the ubiquity of electromechanical coupling in biological tissues, this measurement scheme may find broad application in biological and clinical researches. This totally new imaging concept with industry-birthing implications in nondestructive imaging promises applications in a wide variety of fields.

4. Keywords

- Ultrasonic imaging, Electromagnetic radiation, Piezoelectricity, Magnetism, Medical imaging.

5. Patent status & Patent owner contact

- **Patent license is available.**

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