

Preliminary test for anomaly detection using a trans-admittance mammography (TAM) system with 60×60 sensing electrodes

Mingkang Zhao, Hun Wi, Abu Hena Mostofa Kamal, Tong In Oh^{||}
and Eung Je Woo

Impedance Imaging Research Center and Department of Biomedical Engineering, Kyung Hee University, South Korea

Abstract. We developed a trans-admittance mammography (TAM) system with 60×60 current sensing electrodes as a supplementary method of X-ray mammography. The structure of TAM system is very similar to X-ray mammography. The breast is placed between two plates. The top plate is a single metal electrode for applying a constant voltage. In the bottom PCB plate, there are 60×60 current sensing electrode array kept at ground potential. Current flows from the voltage applying electrode to each sensing electrodes through the breast tissue. We use 72 ammeters and the switch network for measuring exit currents from 3600 sensing electrodes instead of assinging one ammeter for each electrodes. There are 50 kinds of different states for connection to get a projection image of the current distribution underneath the sensing electrode array. The TAM system is attached to a movable shelf to take multi-projection images with different angles. In this paper, we describe the design of implemented TAM system and show the conductivity images from a saline phantom. We analyse the result with different size and position of anomalies. We have a plan for an animal experiment using the TAM system for breast cancer detection.

^{||} To whom correspondence should be addressed (tioh@khu.ac.kr)