

4024 Adaption, Development and Expansion of Xray Mammography Techniques for Ultrasound Mammography

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New techniques for ultrasound examination of the breast have been developed and tested. These new techniques allow: 1) the whole breast to be ultrasonically imaged while it is held under the exact same compression and position orientations that are used in x-ray mammography, 2) a significant decrease in the time required for ultrasound breast examination. There is an on-going need for improved correlation between imaging information obtained by x-ray mammography and that obtained by ultrasound mammography. Tumors and normal tissue structures can be displaced within the breast by current x-ray and ultrasound mammography techniques. However, since the type of tissue displacement for these two methods is different, correlation of the x-ray and ultrasound data is sometimes difficult. The proposed approach to ultrasound mammography should alleviate this problem. Long-term studies were carried out on materials that allow the transfer of x-ray and ultrasound energy and also provide appropriate compression of the breast. Compression paddles fabricated from these materials were applied in an x-ray mammography unit and in an especially designed ultrasound mammography unit. Results indicate that the proposed method has significant potential in terms of 1) rapidly examining the breast and 2) allowing the use of higher ultrasound frequencies.