“Fabrication of ultrasound sensitive polymer-glass composites”

ABSTRACT

Recent work has shown that Ultrasound imaging has significant potential to replace X-ray imaging for medical device implantation and long-term monitoring in patients. To develop and fabricate composite catheters, which improve the contrast achieved with the safer Ultrasound modality and so aid in replacing x-rays. The data presented demonstrates that adding varying amounts of biocompatible glass beads (size range 50-200 µm) to a polymeric device results in unique patterns being produced when it is exposed to ultrasound. Three compositions were fabricated (i.e. 0, 1, and 5 wt% beads) and characterized for glass-polymer distribution and ultrasound response. The addition of 5 wt% beads resulted in a 16-fold increase in contrast enhancement when compared to polymer alone. However, the initial extruded catheters exhibited rough surfaces, due to poor dispersion of the microbeads throughout the polymer, thus compatibilizer coatings for the microbeads were synthesized and deposited by collaborators at the University of Nottingham. Use of coated beads resulted in samples with uniform distribution throughout composite and diminished surface roughness.

BIOSKETCH

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