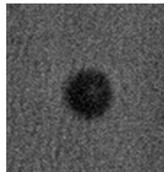




The good, the bad and the bubbly.

Micro bubble behavior under ultrasound.

Michael Conneely
Division of Physics



The good, the bad and the bubbly.
Micro bubble behavior under ultrasound.



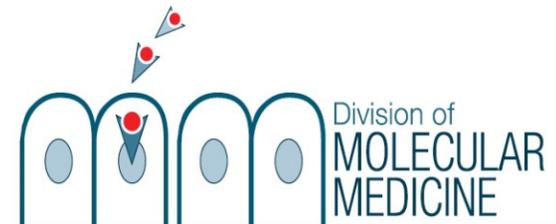
PaLS Open Day 2013

Motivation



Concepts & Innovation in Cavitation and Sonoptic Sciences

- Enhance understanding of microscopic & [sub] microsecond behaviour of microbubbles in Ultrasound fields.
- Direct relevance across therapeutic and diagnostic clinical modalities; namely targeted drug delivery and molecular imaging.



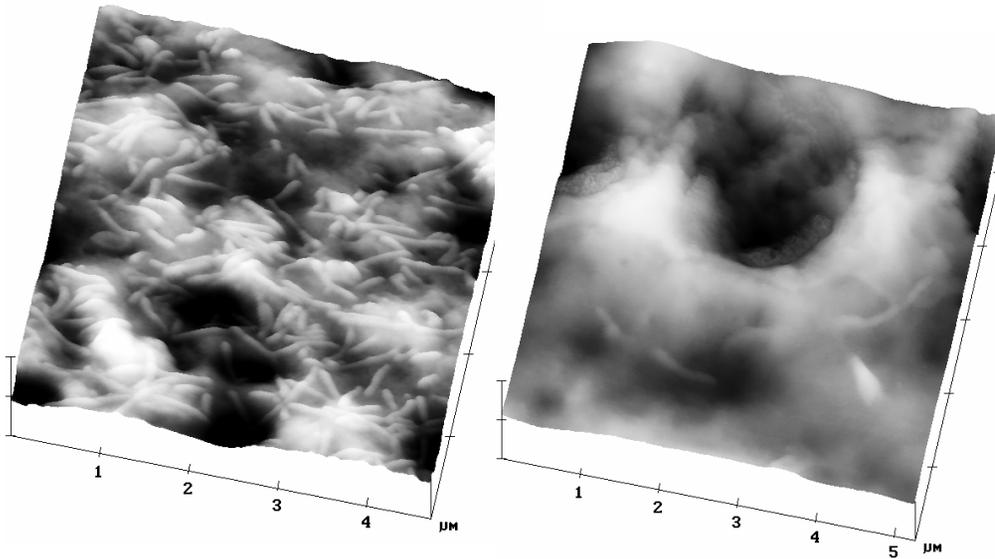
The good, the bad and the bubbly.
Micro bubble behavior under ultrasound.



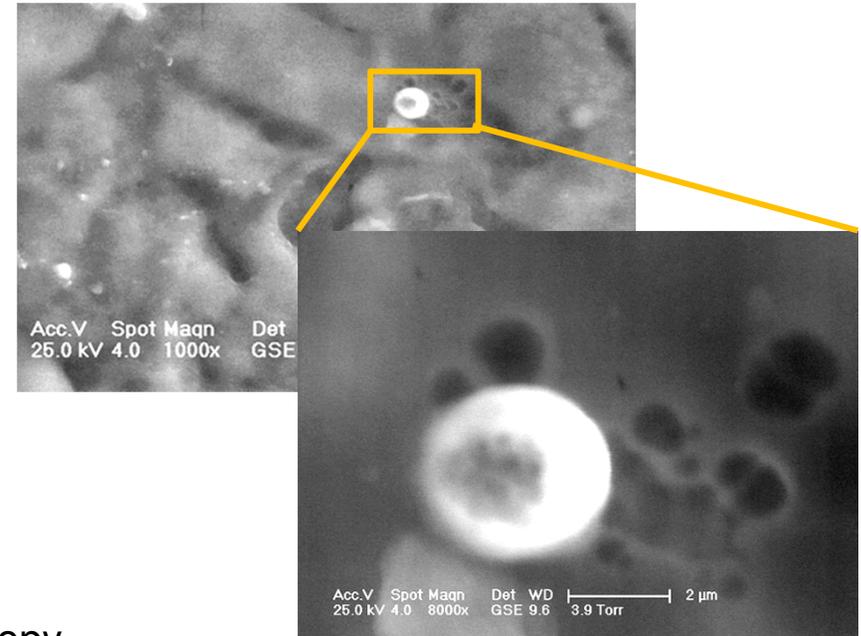
PaLS Open Day 2013

Motivation

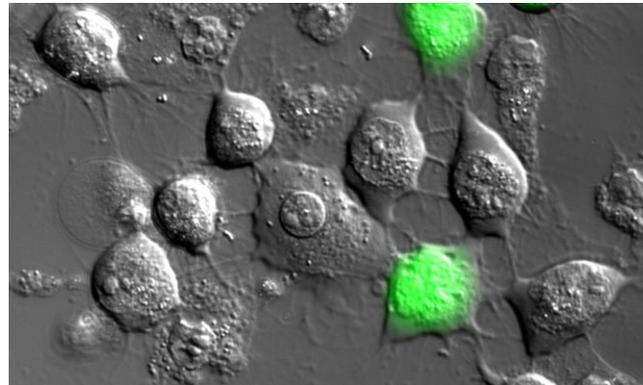
AFM image of cell membrane pre and post exposure



SEM image of cell monolayer



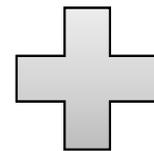
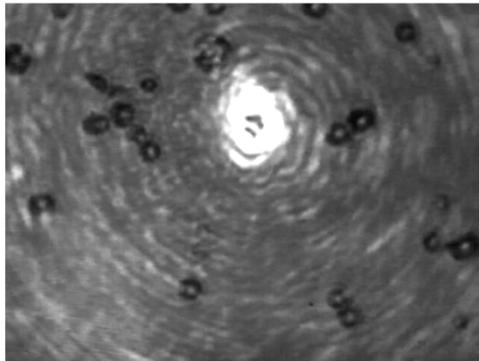
Fluorescence microscopy



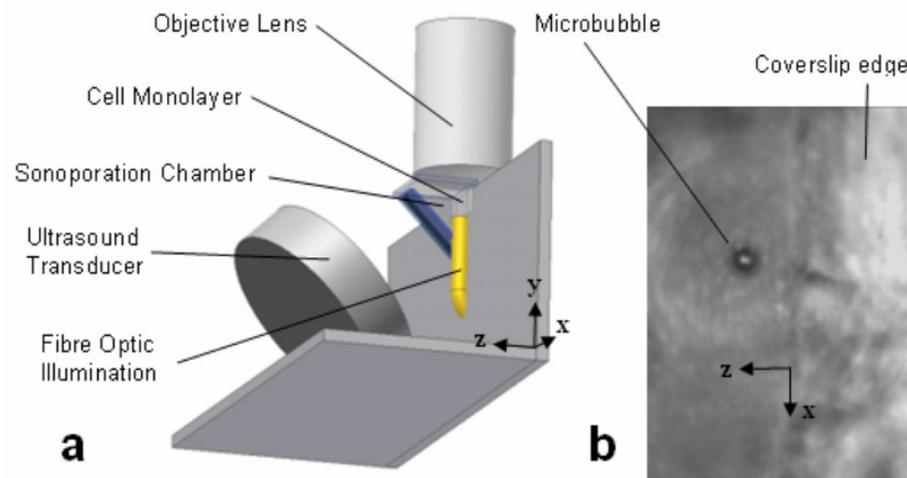
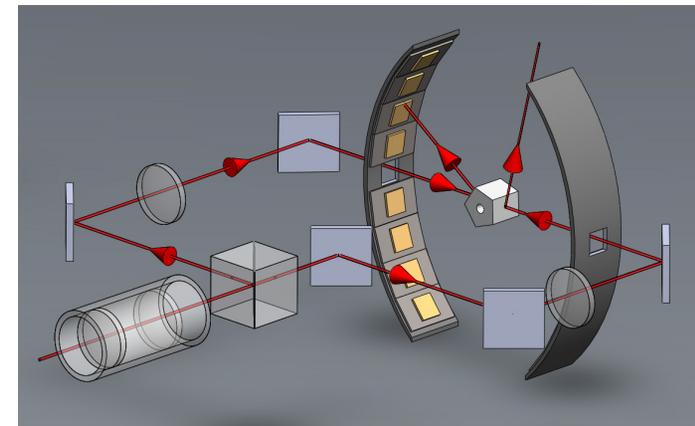
The good, the bad and the bubbly.
Micro bubble behavior under ultrasound.

Experimental Setup

Optical Trapping



High Speed Imaging



The good, the bad and the bubbly.
Micro bubble behavior under ultrasound.

Experimental Results

- 2M fps image sequences of UCA microbubble

Side on view

Top down view

Conclusions

- Combination of optical trapping and high speed imaging resolves bubble behavior under ultrasound.
- Implementation of computer generated holographic trapping system allows flexibility in multi-bubble geometric arrangement.

Acknowledgements

- H. Rolfsnes
- T. Goh
- C. Main
- C. McDonald
- P. Campbell
- D. McGloin
- K. Dholakia (St. Andrews)
- P. Prentice (IMSaT)

For info : m.j.conneely@dundee.ac.uk



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