Ultrasonic Lithotripsy

The use of larger amplitude HIFU to produce cavitation in order to break solid objects in the target area, for example to fission kidney or gall stones, is now widespread. The cavitation generated at the focal point (figure 1) pulverizes the material of the stone, ultimately reducing it to a powder (Sokolov *et al.* (2001)). This is very similar to *shockwave lithotripsy* but instead utilizes HIFU. The use of HIFU in lithotripsy is relatively recent (Bailey *et al.* (2003)) and has some significant advantages. With a significantly narrower spectrum HIFU can be focused much more precisely. It is therefore possible to limit the region of cavitation more narrowly on the surface of the stone, enhancing the damage to the stone while reducing the collateral damage.

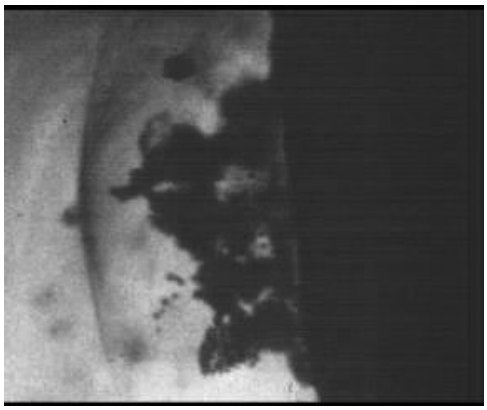

Figure 1: Bubble cloud (center) on face of a target stone (right) (from Matsumoto *et al.* (2003)).