

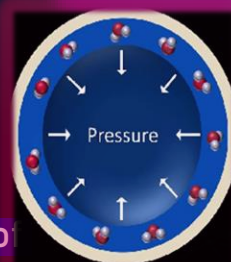
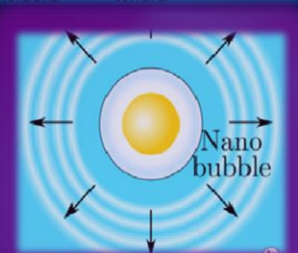
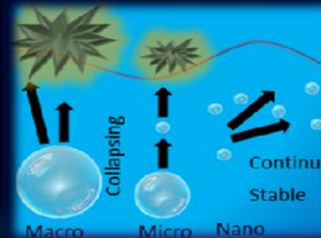
SMALLER BUBBLES , BIGGER IMPACT : NANOBUBBLES, A GAME CHANGER IN ENDODONTICS

WHAT ARE NANOBUBBLES?

NANOBUBBLES (NBs) are gas filled of vapor filled cavities within the liquid with a diameter that ranges between 1 - 200nm

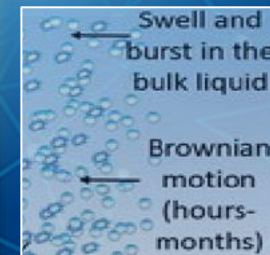
NANO VS. MICROBUBBLES

Microbubbles are created after the transmission of ultrasound intensity in the liquid. They are unstable as they oscillate and implode on the surface.



PROPERTIES:

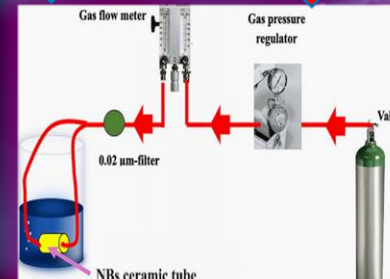
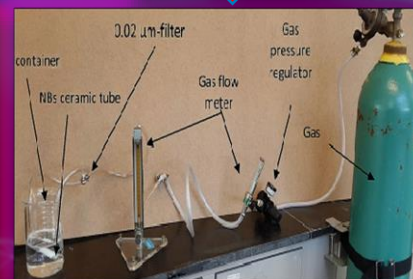
- Size
- Surface Charge
- Surface Area
- Stability
- Composition
- Hydroxyl radical potential
- Gas Volume



ADVANTAGES:

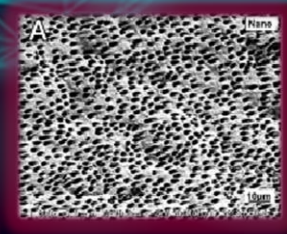
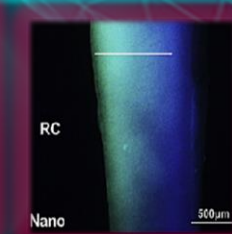
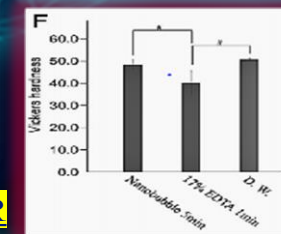


NANOBUBBLE WATER GENERATOR



APPLICATION OF NANOBUBBLES IN ENDODONTIC THERAPY :

- 1) More effective than 17 % EDTA in smear layer removal.
- 2) Enhances intracanal medicament delivery - tetracycline into dentinal tubules > 1mm in depth into dentinal tubules.
- 3) Improved disinfection capacity of 1.5 % NaOCl upto 50 mm within the dentinal tubules.
- 4) Regenerative endodontic procedures



CONCLUSION:

Nanobubble water is a promising adjunct to enhance disinfection and penetration capacity of endodontic irrigants and medicaments in dentinal tubules.

REFERENCE:

Nanobubble enhanced antimicrobial agents: A promising approach for regenerative endodontics- Hasan Shawli, Koichiro Iohara, Md Tahroush, George Huang