

# APPLICATION OF SONOCHEMISTRY FOR FORMATION OF NANOSIZED SILVER AND SILVER/HYDROXYAPATITE COMPOSITE PARTICLES

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Scientific program: Nanoscience and Nanotechnology

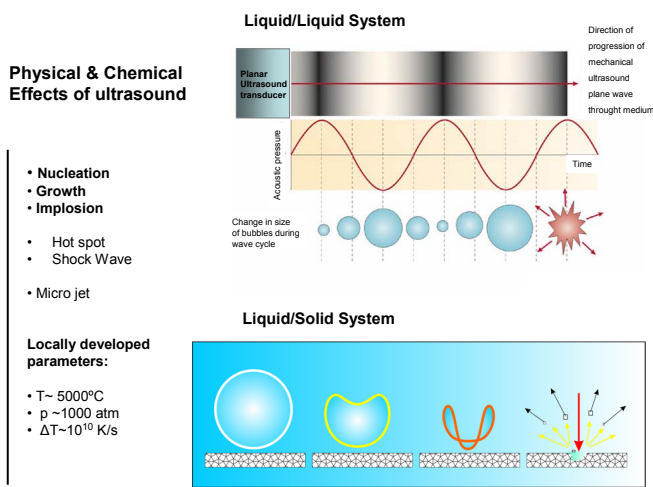
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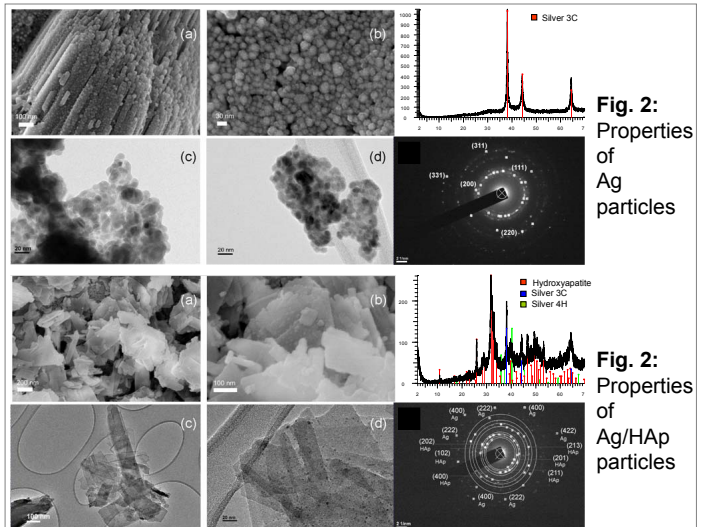
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## Sonochemical synthesis



## Results



## Noble metals and hydroxyapatite properties

- Nanosized silver is well-known antibacterial agent.
- Hydroxyapatite is bioactive and osteoconductive bioceramics.

### The main goal of our work is:

- Application of sonochemical synthesis method for preparation of nanosized silver particles and silver/hydroxyapatite composite for potential biomedical application.

## Discussion & Conclusions

Urea, applied as a capping agent of silver, promote formation of silver complex which decomposes at  $300^\circ\text{C}$ .

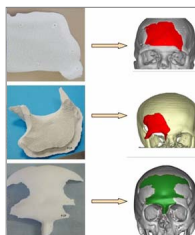
As a result:

- Monophase Ag with the structure of cubic silver (Ag 3C) and sphere-like morphology with particles up to 30 nm in size forms.
- In the case of HAp/Ag composite, Ag with the structure of cubic (3C) and hexagonal (6H) silver and sphere-like morphology with particles up to 10 nm in size attached to the surface of HAp rods was obtained.

**Morphology and structure of Ag particles within HAp/Ag composite can be influenced by the contribution of HAp surface to Ag particles growth.**

## Applications & Perspectives

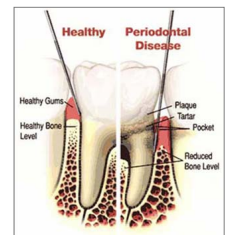
### APPLICATION OF MATERIALS WITH ANTIBACTERIAL PROPERTIES



Implant fabrication

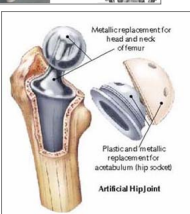
### NANOMEDICINE

Treatment of dental infections



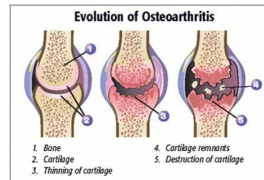
Prevention

Therapeutics



Metallic implant coatings

Dental fillers or Implant coatings



Treatment of orthopedic infections

