

## Microwave Synthesis of Mesoporous Carbonated Hydroxyapatite for Biomedical Applications

조은범<sup>†</sup>, Gopalu, Karunakaran

서울과학기술대학교

(echo@seoultech.ac.kr<sup>†</sup>)

In this study, we report a rapid microwave-assisted hydrothermal amalgamation of mesoporous carbonated HAp with tunable nanoscale characteristics using organic modifiers such as oxalic acid and sodium dodecyl sulfate (SDS) as a regulator. The observed results clearly showed that the mesoporous carbonated HAp with tunable nanoscale characteristics can be achieved through a microwave enabled hydrothermal digester with the aid of organic modifiers. Moreover, it was found that the addition of oxalic acid during the synthesis can make strong interaction with calcium ions which resulted in the HAp along with calcium oxalate phase whereas the addition of SDS leads to pure HAp phase. Oxalic acid-mediated synthesis leads to form loosely agglomerated rod-like mesoporous nanoparticles having 10 nm width and 20–40 nm length with a specific surface area of  $89 \text{ m}^2 \text{ g}^{-1}$  while SDS-mediated synthesis leads to form nanorods bearing 20 – 45 nm of width, and 55 – 100 nm of length with specific surface area of  $48 \text{ m}^2 \text{ g}^{-1}$ . In addition, oxalic acid and SDS also help in tuning the pore size and pore volume by making interaction with HAp crystallites during the synthesis process.