ELMINA 2022

SECOND INTERNATIONAL CONFERENCE ON ELECTRON MICROSCOPY OF NANOSTRUCTURES

ДРУГА МЕЂУНАРОДНА КОНФЕРЕНЦИЈА О ЕЛЕКТРОНСКОЈ МИКРОСКОПИЈИ НАНОСТРУКТУРА

August 22nd–26th, 2022, Belgrade, Serbia
22–26. август 2022. Београд, Србија

SECOND INTERNATIONAL CONFERENCE

ELMINA 2022

Serbian Academy of Sciences and Arts, Belgrade, Serbia
August 22nd-26th, 2022
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Program and Book of Abstracts

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and
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GENERAL INFORMATION

DATE AND VENUE: The conference will be held August 22nd-26th, 2022 at the Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia with the beginning at 8:30 AM on August 22nd 2022, in the main lecture hall.

REGISTRATION: At the registration desk, located in front of the main lecture hall of the conference venue. Registration desk working hours are: Monday, August 22nd, from 8:00 to 14:00, Tuesday, August 23rd, from 8:15 to 14:00, Wednesday, August 24th, from 8:15 to 14:00 and Thursday August 24th, from 8:15 to 12:00. Registered participants will receive a nametag and a conference bag.

INSTRUCTIONS FOR AUTHORS: The conference will feature plenary sessions, oral sessions and poster sessions as well as vendor presentations during lunch breaks. Presentations during plenary sessions will last 30 minutes each, including discussion while oral presentations will be 15 minutes each, including discussion. Standard and hands-free microphones will be on site. No A-V equipment will be provided for any poster presentations. Poster presenters must remain at their poster on their assigned day during the required poster session. Each poster will be allocated a 1180 mm high and 841 mm wide (A0 format) display area.

CONFERENCE AWARDS: Oral and poster presentations will be reviewed according to the following criteria: (a) relevance to a specific symposium, (b) scientific content, quality and innovative proposals, (c) clarity of the text, and (d) compliance with the format. During the conference, the best three (3) oral and three (3) poster presentations, selected by an award committee, will receive awards.

Influence of Post-Synthesis Treatments on the Properties of Brushite/Monetite Powders

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Dicalcium phosphate (DP) materials, of which brushite and monetite were the most known, have been intensively studied for several decades because of excellent resorptive and osteoconductive properties that can satisfy the requirements needed for various medical applications, such as bone cements, coatings of metallic implants and bone grafts [1,2]. Brushite and monetite are the di-hydrated ($CaHPO_4 \cdot 2H_2O$) and anhydrous ($CaHPO_4$) forms of DPs, respectively, which showed much better resorption due to higher solubility in comparison to the hydroxyapatite (HAp) and tricalcium phosphate (TCP) [2].

In this study, the effect of different post-synthesis treatments on composition and morphology of four brushite/monetite powders, were analyzed. All the powders have been prepared by modified precipitation method described previously [3] with molar ratio of starting reagents $(NH_4)_2HPO_4$ and $Ca(NO_3)_2 \cdot 4H_2O$ being 7:10. After filtering, powder I was obtained by drying the precipitate at 105 °C for 4 h, while powder II was obtained by precipitate freezing at –10 °C for 72 h, followed by drying at room temperature for 72 h. By drying the precipitate at 110 °C for 24 h and 105 °C for 3 h, powders III and IV were obtained, respectively. X-ray powder diffraction (XRPD) revealed that all the powders are two-phase systems consisting of brushite and monetite: 98.8 mas.% brushite and 1.2 mas.% of monetite in I, 97.7 mas.% brushite and 2.3 mas.% of monetite in II, 66.7 mas.% brushite and 33.3 mas.% of monetite in III and 45.9 mas.% brushite and 54.1 mas.% of monetite in IV. Field Emission Scanning Electron Microscopy (FESEM, Figure 1) showed that particles of prepared materials form the agglomerates in the form of triangular plates. In addition, materials were analyzed for their spectral, thermal and textural properties.

References:

[1] F Tamimi, Z Sheikh and Jake Barralet, Acta Biomaterialia **8** (2012), p. 474.
[2] E Boanini *et al*, Journal of Functional Biomaterials **13** (2022), p. 65.
[3] I Mayer *et al*, European Journal of Inorganic Chemistry (2003), p. 1445.
[4] The authors acknowledge funding from the Ministry of Education, Science and Technological Development of the Republic of Serbia (Contract No. 451-03-68/2022-14/200287 and Contract No. 451-03-68/2022-14/200135).

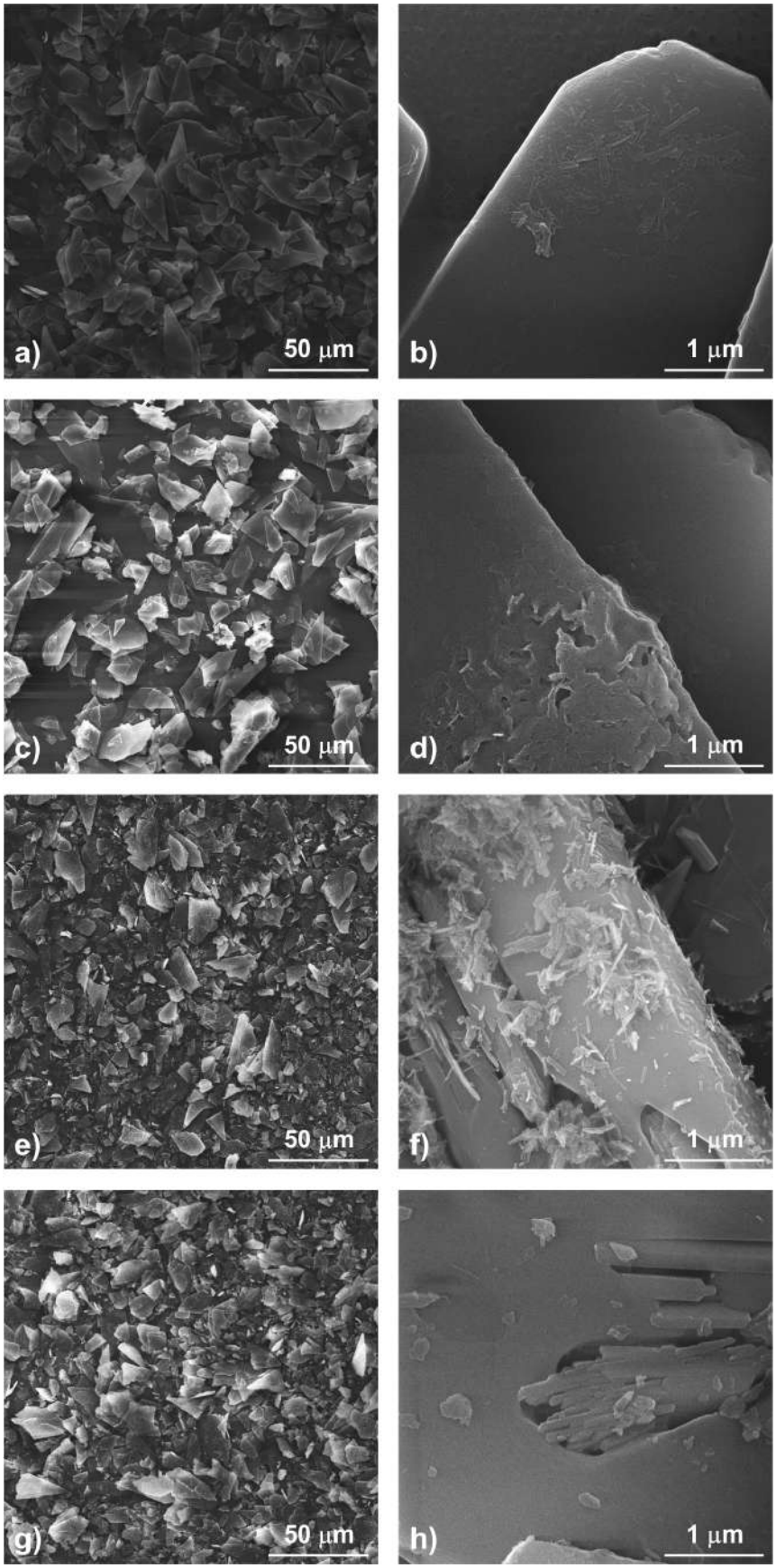

Figure 1. FESEM micrographs of powders: I (a, b), II (c, d), III (e, f) and IV (g, h).

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