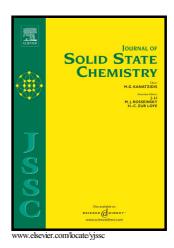
# Author's Accepted Manuscript

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Sumio Kato, Sho Ikeda, Kanji Saito, Masataka Ogasawara



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## **ACCEPTED MANUSCRIPT**

Fe incorporation into hydroxyapatite channels by Fe loading and post-annealing

Sumio Kato, Sho Ikeda, Kanji Saito, Masataka Ogasawara

1. Department of Materials Science, Graduate School of Engineering Science, Akita University, 1-1

Tegatagakuen-machi, Akita, 010-8502 Japan

katos@gipc.akita-u.ac.jp

#### Abstract

Apatite-type solid solutions with the formula Ca<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>Fe<sub>x</sub>O<sub>y</sub>H<sub>z</sub> containing Fe atoms in the channel sites of Ca<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>(OH)<sub>2</sub> were successfully synthesized by impregnation with aqueous solution of Fe, followed by heat treatment at 1150 °C in air and cooling to room temperature. The unit cell volume of Ca<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>Fe<sub>x</sub>O<sub>y</sub>H<sub>z</sub> increased with increasing Fe content. The results of structural refinement using powder X-ray diffraction data and Raman spectroscopy suggested that the incorporated Fe ions occupied four-fold sites, away from the center of the channel in the apatite lattice. This method may be useful for synthesizing novel apatite-type functional materials containing transition metals.

1

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