

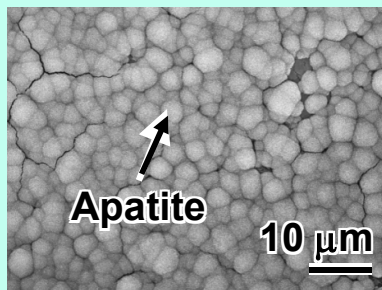
Development of highly functional inorganic materials under mild conditions

Associate Professor Takahiro Kawai

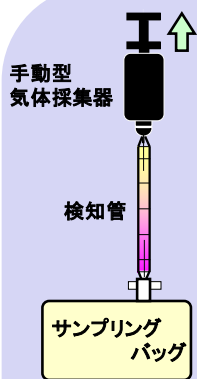
Illustration



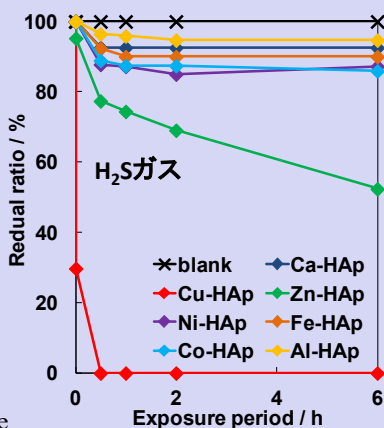
A starch-reinforced calcium phosphate paste, which can be deformed out of our body and set in physiological conditions.



Bone-like apatite deposited on titanium which were subjected to chemical and heat-treatments, after soaking in a simulated body fluid.



Schematic image of an examination for gas adsorption ability of a sample.



Adsorption behavior of hydroxyapatites modified with various metal cations for hydrogen sulfide gas.



Appearance of Hap discs modified with Cu(II) before and after exposure of H₂S.

Content:

We are involved in development of **novel functional materials** based on **inorganic solid**, such as...

- 1) **Hard tissue-repairing materials**: Chemical modification of a substrate or coating of calcium phosphates on a substrate to promote new bone formation in orthopedic or dental defects in our bodies.
- 2) **Environmental purification materials**: Specific adsorption and removal of odorants, toxic gases and virus, etc.
- 3) **Nanostructural materials**: Excellent properties for energy conversion or catalytic reaction. (Ex. inorganic oxide nanotubes)

We have focused our interests on developing these materials via ways under mild conditions, which can reduce environmental load.

Appealing point:

Industrial-academic collaboration is welcomed.

Our goal is development of products closely related to our lives.

My advantage is to provide even already existing materials with high added-value.

Yamagata University Graduate School of Science and Engineering
Research Interest : Inorganic chemistry, Ceramics

E-mail : t-kawai@yz.yamagata-u.ac.jp

Tel : +81-238-26-3107

Fax : +81-238-26-3107

