

層状カーバイド

Auイオン含有酸性溶液
(1M HClaq: pH<1)

振とう

金層Auとして析出し
塊状の凝集を形成

ろ過
乾燥

圧縮

Materials Chemistry Division

~Toward a sustainable society~
Development of recycling technologies



“Realization of a sustainable society” is a worldwide dream we currently work towards as a common goal. One of the key technologies to realize such a society is recycling of materials. Using environmentally friendly methods, we can create things that are in harmony with the environment, use them for a long time, and even if they break, they can be recycled and reused. He is now striving to develop such materials and technologies.



Professor Takeshi HAGIO

He joined NGK Insulators, Ltd. in 2009. He received his Doctor degree in engineering from Hokkaido Univ. during this period. He transferred to Nagoya Univ. and to his current position. He specializes in materials science, surface & interface engineering, and separation.

>> Beginnings of my path to academia

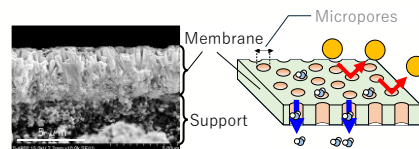
I've had a strong sense of curiosity since I was little, and I've been interested in all sorts of mysterious phenomena. I even got electrocuted by sticking the wire used to tie up some souvenir sweets into an electrical outlet... In high school, I became interested in creating habitable areas in space or under the sea. Eventually I was fascinated by widely used materials in our daily lives. I am currently exploring infinite possibilities of materials and recycling.

>> In the Future

To maintain lifestyles we enjoy today, sustainable products and processes are essential. Simplification of the preparation procedures of highly functional materials can provide environmentally friendly, energy-saving, and space-saving product manufacturing. We challenge to realize “Minimization” of processes.

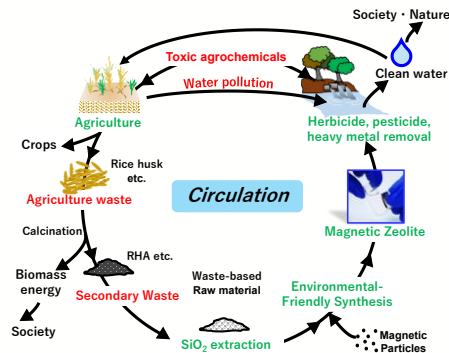
>> After Graduation

Possibilities of “materials” are endless. Knowledge on properties and evaluation methods of materials are important not only for material companies, but also for developers of daily items and even plant engineers. By understanding materials, you can become a talented person who can be active in a variety of fields.



The world's first separation membrane using a hexagonal tungsten oxide, has been created. It has tunnel-like pores with windows in the same level of single molecules.

(*J. Membr. Sci.*, 620, 118860 (2021))



Using silica (a raw material for glass) extracted from rice husks, we succeeded in synthesizing materials that remove harmful substances such as pesticides emitted from agriculture.

(*Arab. J. Chem.* 16 (8), 104959 (2023), *Solid State Sci.*, 149, 107473 (2024))