

Title Ammonia Synthesis on iron and ruthenium catalysts;
laboratory to industries

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 (Cabinet office)



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Place I²CNER Hall, Ito campus, Kyushu University

Abstract

Ammonia is now used as a fertilizer and chemicals, but will be used as an energy carrier of hydrogen in the future. For example, the studies of ammonia fuel for SOFC have started world widely and ammonia synthesis using renewable energy has started little by little. Here, the conventional ammonia synthesis process and catalysis are reviewed scientifically. The science and technology about ammonia synthesis are huge. Now, it is useful to learn some of these contents for making the new processes of synthesis and utilization of ammonia.

The expected contents are as follows; 1) Process of ammonia synthesis. 2) Reaction mechanism and active element of the catalyst. 3) Activation of N₂ on Fe: structure sensitive. 4) Role of promoter in iron catalyst. 5) Activation of N₂ on Ru: electron donation. 6) Role of promoter in ruthenium catalyst. 7) Difference of mechanism and application for the process.

About the Speaker

Prof. Aika has published many works about catalysis of ammonia synthesis from the end of 60' to quite recent. Early 70' he and his group has discovered the strong promoter effect with electron donor to ruthenium catalyst for ammonia synthesis. His group has continued the research about electron donation effect on dinitrogen activation from many aspects. Their discovery stimulated BP group to establish a new industrial catalyst for ammonia synthesis, whose technology has been succeeded to Kellogg Advanced Ammonia Process (KAAP) spreading world widely.

Host: Assoc.Professor Miho Yamauchi

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