

Koji Kuramoto

Affiliation: Energy Process Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)

Address: Onogawa 16-1, Tsukuba, Ibaraki 305-8569, Japan

E-mail: koji-kuramoto@aist.go.jp

Website: https://www.aist.go.jp/index_en.html



Education

1998 Ph.D. in Chemical Engineering, Graduate School of Engineering, Hokkaido University

1994 M.S. in Energy Engineering, Graduate School of Engineering, Toyohashi University of Technology

1992 B.S., in Energy Engineering, Toyohashi University of Technology

Professional Career

2018.4 – present Group leader, Energy Conversion Process Group (AIST, Japan)

2012.5 – 2012.7 Invited researcher in Sapienza University of Rome (Rome, Italy)

2007.4 – 2018.3 Senior researcher, National Institute of Adv. Ind. Sci. and Tech. (AIST, Japan)

2006.4 – 2007.3 Deputy director, Agency of National Resources and Energy, Ministry of Economy, Trade, and Industry (METI)

2001.4 – 2006.3 Researcher, National Institute of Adv. Ind. Sci. and Tech. (AIST, Japan)

2000.4 – 2001.3 Researcher, National Institute for Resources and Environment (NIRE, Japan)

1999.4 – 2000.3 Invited researcher, Faculty of Applied Physics, Delft University of Tech.

1997.4 – 1999.3 Research Associate, Department of Chemical System Eng., Univ. of Tokyo

Selected Publications

1. F. Kosaka, T. Yamaguchi, Y. Ando, T. Mochizuki, H. Takagi, K. Matsuoka, K. Kuramoto, “Thermal management of CO₂ methanation with axial staging of active metal concentration in Ni-YSZ tubular catalysts.”, *Int. J. Hydrogen Energy*, 46, 4116-4125(2021)
2. F. Kosaka, Y-Y. Liu, S-Y. Chen, T. Mochizuki, H. Takagi, A. Urakawa and K. Kuramoto, “Enhanced Activity of Integrated CO₂ Capture and Reduction to CH₄ under Pressurized Conditions toward Atmospheric CO₂ Utilization.” *ACS Sustainable Chem. and Eng.*, 9, 3452-3463(2021)
3. T. Sasayama, F. Kosaka, Y-Y. Liu, T. Yamaguchi, S-Y. Chen, T. Mochizuki, A. Urakawa and K. Kuramoto, “Integrated CO₂ capture and selective conversion to syngas using transition-metal-free Na/Al₂O₃ dual-function material.”, *J. CO₂ Utilization*, 60, 102049(2022)
4. F. Kosaka, T. Sasayama, Y-Y Liu, S-Y. Chen, T. Mochizuki, K. Matsuoka, A. Urakawa and K. Kuramoto, “Direct and continuous conversion of flue gas CO₂ into green fuels using dual function materials in a circulating fluidized bed system.”, *Chem. Eng. J.*, 450(2) 138055(2022)
5. M. Inaba, K. Kuramoto and Y. Soneda, “Effect of coexistence of H₂S on production of hydrogen and solid carbon by methane decomposition using Fe catalyst.”, *Int. J. Hydrogen Energy*, 48(40), 15077-15091(2023)
6. Y. Ono, T. Sasayama, F. Kosaka, M. Morimoto, K. Matsuoka, K. Kuramoto, “Numerical prediction of spatiotemporal CO₂ capture and methanation reaction behavior in a fixed-bed reactor packed with a dual-function material.”, *Int. J. Hydrogen Energy*, 90, 1128-1139 (2024)
7. T. Sasayama, Y. Ono, F. Kosaka, Y-Y. Liu, S-Y. Chen, T. Mochizuki, K. Matsuoka, A. Urakawa

and K. Kuramoto, “Continuous CO₂ capture and reduction to CO by circulating transition-metal-free dual-function material in fluidized-bed reactors.” Separation and Purification Tech., 354, 128602 (2025)

8. Y. Ono, M. Tokuda, T. Sasayama, F. Kosaka, S. Matsuda and K. Kuramoto, “Application of moving-bed reactor for effective hydrogenation of CO₂ captured with a dual-function material to enhance the concentration of the gaseous product of methane.”, Chemical Engineering Journal 505, 159585 (2025)

Research Interests

1. Application of Fluidized/moving bed for thermochemical conversion
2. Coal/ Biomass combustion and gasification.
3. Hydrogen-related technologies (e.g Hydrogen production, Fuel cells, storage tech)

Awards

1. HATAKEYAMA award of Japan Society of Mechanical Engineers, 1990
2. Encouragement award of Japan Institute of Energy, 2004
3. AIST president award, 2024