List of Dissertation Abstract　（Department of Artificial Environment）

Name	Supervisor	Title	Abstract
Deguchi Yoshikuni	Atsumi Miyake	Study on autocatalytic decomposition of dimethyl sulfoxide and safe handling system thereof	Dimethyl sulfoxide (DMSO) is a solvent widely used both in laboratories and in industries, while it is an energetic substance involving a decomposition risk which can lead to an undesired explosion, unless otherwise proper control is taken. Objectives of this study are to elucidate the decomposition mechanism of DMSO and to establish a safe handling system thereof. The process of DMSO decomposition was divided into three stages, and the reactions in each stage were investigated by combining thermal analysis and chemical analysis of the product. The decomposition behaviors of DMSO clarified were summarized and safe handling system was considered.
KOMATSU Junko	OYA Masaru	Analysis of Consumer Information on the "Acid / Base Neutralization Theory" in Cleaning	The " acid-base neutralization theory in cleaning " is the theory that acidic stains and alkaline stains can be neutralized and removed with alkali and acid, respectively, is widespread among Japanese consumers. Analyzing the diffusion process of misinformation neutralization theory, theoretically unclear acid washing experimentally verified, and further studied the method of information transmission of life science. Problems such as neutralization and confusion of the definitions of acids and bases were confirmed. Instead of the neutralization reaction, Le Chatelier's principle regarding H + of acid and the balance of ionic bonds were interpreted, and a correction logic could be constructed.

Fujita Miwako	Daisuke Narumi	Study on energy consumption of grocery store considering interacting effects of space conditioning and refrigerating equipment	Grocery stores are an industry with high energy density, and equipment development and operational improvement measures for energy saving are required for decarbonization. However, SC, space conditioning, building structure, etc. affect each other, making it difficult to simulate energy consumption, and no one has been completed yet. In this study, we proposed a new energy consumption model by combining an energy consumption model using a building space conditioning load and an SC cooling load, and a vertical temperature distribution model created from the results of sensitivity analysis by CFD.
SAKAMOTO Yuka	Masaru Oya	Estimation of the detergency factor of ecological cleaning with natural surfactants and analysis of the related consumer information	Natural cleaning is a cleaning method that uses familiar food materials. However, there has been no academic study of this issue, and some consumer information is erroneous. We have therefore clarified the trends and cleaning mechanisms of beer and washing rice water, which are used as natural surfactants among the materials, by collecting and analyzing consumer information and experimentally verifying the information. Based on the results, the author discusses future applications and issues regarding consumer education.
Mizuta Yuto	Miyake Atsumi	Study on emergency safety measures for the incidents of chemical plants	The study about preventive safety measures in chemical plants has been studied well since before, however, it is hard to say that the study about post measures is sufficient. In this study, the sophisticated method of depressurization design for runaway reaction was developed in terms of experiment and simulation, and furthermore, emergency evacuation system assuming chemical release was also developed. This fundamental case study for implementation in actual plant would be applicable, and then it is expected widely usage as safety measures.

Pervez Saima	Satoshi Nakai	Development of Land Use Regression (LUR) model for Nitrogen Dioxide (NO$_2$) pollution in Lahore, Pakistan	The purpose of this study was to develop a Land use regression (LUR) model to provide a better understanding of air exposure and to depict the spatial patterns of air pollutants within the city. The land-use regression model was developed using the average seasonal concentration of Nitrogen Dioxide (NO$_2$) and considering twenty-two potential predictor variables including road network, land use classification, and local specific variables (vehicle maintenance workshop, VMW).