Innovation in manufacturing for a new sustainable resource recycle

Construction of integrated circular production system by product lifecycle management and innovative dismantling technology development

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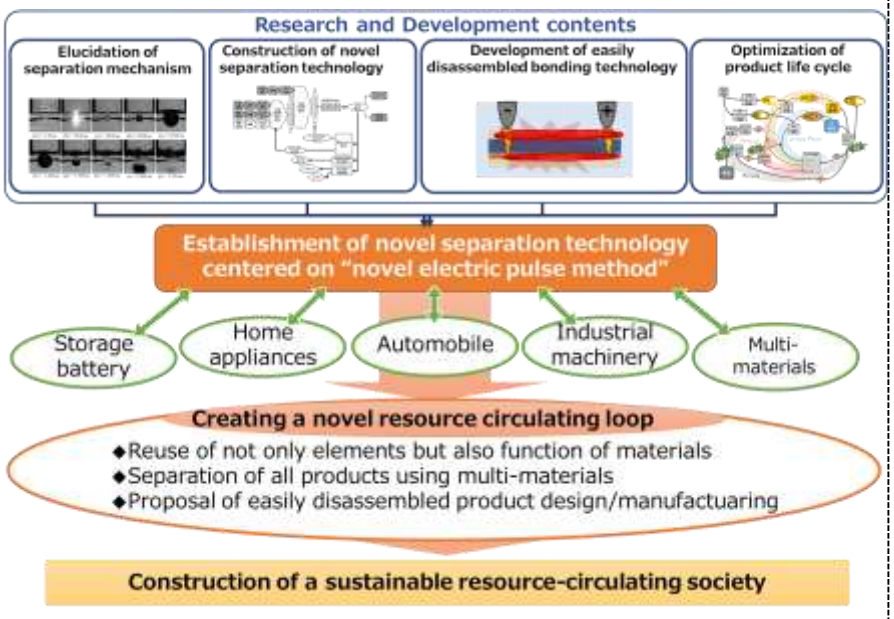
Collaborating Institutions : Kumamoto University, The University of Tokyo, Tohoku University, Tokyo Institute of Technology, Saitama Institute of Technology,
Honda R&D Co., Ltd., Nissan Motor Co., Ltd., ADEKA Corp., Matsuda Sangyo Co. Ltd., Toray Industries Inc., NPC Inc., HAMADA Co. Ltd., Lexer Research Inc., etc.

Objective :
Development of the novel separation technology between different materials by pulsed electric discharge and the life cycle simulation to optimize product design/manufacturing assuming separation for reuse/recycling, toward the construction of a novel integrated circular production system.

Research Summary :

High resource efficiency and waste minimization are a big issue to realize a sustainable society. Especially in recent days, the trend of "multi-materialization" that combines different materials is growing in the automobile industry and sophisticated separation technology for them is strongly desired.

In this project, we develop the novel, high-selectivity, and high-efficient separation technology for different materials by pulsed electric discharge. To accomplish it, the separation mechanism and optimum control method are elucidated as fundamental research and development. At the same time, we promote easily disassembled design and manufacturing processes based on the above mentioned obtained knowledge. We contribute to the realization of a resource-circulating society by it coupled with the simulation tool to optimize a product life cycle based on the novel manufacturing system.



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