**Global Research Outreach\_2025\_Call for Proposal**

**Theme: Semiconductor Metrology**

**- Sub-Theme: Computational Chemistry**

**(A chemical reaction simulation technique for evaluating the chemical resistance of semiconductor piping materials)**

In the semiconductor industry, various chemicals are used and discharged as wastewater through piping systems. The piping material, thermoplastic, has chemical resistance but can be damaged depending on concentration, temperature, and aging. Such damage affects the operation of semiconductor facilities, and therefore, predicting chemical reactions and evaluating risks at specific concentrations and temperatures is necessary for prevention.

It is expected that a database of chemical components and materials and a reactive simulation program for mixed wastewater will be developed to prevent accidents and evaluate the chemical resistance of new products.

The following items are required for simulation development:

* Establishing a chemical composition database for used chemicals and piping/duct materials
* Conducting chemical experiments on material reactivity
* Developing a simulation that can input existing/new chemical reaction experimental data
* Building a virtual simulation system for reactivity of chemicals and materials

※ *The topics are not limited to the above examples and the participants are*

*encouraged to propose the original idea.*

※ *Funding: Up to USD 150,000 per year*