

## The collaboration research for the Dual Graduate School between VNU and JAIST

### [Title of collaboration research]

Mutual collaboration on new development of environmental sciences with mass spectrometry

### [The members of collaboration research]

Professor Kazuo Tsujimoto, and not greater than four

### [Reference home-page address]

[http://www.jaist.ac.jp/ms/labs/ttl/KT/tujimoto-home\\_e.html](http://www.jaist.ac.jp/ms/labs/ttl/KT/tujimoto-home_e.html)

### [Other references]

<http://www.jaist.ac.jp/ms/labs/ttl/KT/MS/Handout00e.pdf> to ../ Handout07e.pdf

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Natural science is now developing for the conjugate science gradually. Environmental sciences also consist of interdisciplinary sciences including the analytical chemistry. For an example, the understanding of the chemical ecology in the circumstances needs ultra-fine analysis in precision and quantity. Because, the extremely small amount of material can effect on fragility of an ecosystem. A femto-mol of dioxin influences intercalation of DNA in living thing to result in mutagenesis. Therefore, the analysis of the nano-scaled material is capable of opening the new world by the way of the newly developed instrumentation in JAIST. However, the details of the mechanistic approach and development of the application still remain unsolved. Furthermore, the remedial action of the natural system should be understood in the field works of the both countries.

Based on the relationship between nano-science and global environments, the following projects will be proposed:

1. Detection of Environmental Disruptors and Distribution of Local Area
2. Research and Development of Naturally Occurring Products for Pharmaceutical Utilization
3. Biodiversity and Chemical Diversity in Japan and Vietnam

As a real accomplishment, several targets are configured in the beginning of the project:

1. Mass spectrometric evaluation of polychlorinated aromatics including dioxin and heavy atom ions in the local areas. The river waters consisting of highly diluted pollutants are planned to be sampled. Data will be mapped for the local areas. In particular, we have developed oligosaccharide derivatives capable of effectively decomposing the chlorobiphenyls upon UV-irradiation. The development is also positioned as the target of this project.
2. Recently the traditional medicines have been attracted against the life-style related diseases. Most of the medicines are derived from the plants. As compounds, polyphenols, aldehydes and reductive compounds are candidates. In particular, the tropical or subtropical plants usually contain effective and useful compounds. They are isolated and their structures are determined. The bioassay of the compounds will be carried out not only *in vitro* but also *in vivo*. It is more important that the research and development are based on historical knowledge. The joint work will be shared by the characteristic fields.

Since the flora is different between Japan and Vietnam, the plants have the individual characteristics even though the circumstances in the country are the similar. The diversity of the plants provides the possibility of the various kinds of folk medicine. Number of compounds will be developed in the new anti-oxidation. The joint works will be promising in anti-oxidation field. Especially the work sharing is considered as VNU standing on the collection of historical and medicinal documents and plants, JAIST revealing the chemical structures and bioassay, the both institutes sharing the obtained knowledge.