



**Research in one sentence**

**Water & Wastewater Treatment and Resource Recovery from Biomass**

**What is your uniqueness in your research?**

I have been working in the area of waste and wastewater management for the last 20 years and our aim is to transform this cost-intensive area into a revenue-generating sector. This can be achieved by developing and implementing cost-effective treatment technologies that – (a) rely more on natural and less on energy-intensive processes; (b) address effectively the current requirements, for example, micropollutant removal from wastewater for safe reuse of the treated water; and (c) enable recovery of value-added byproducts of treatment in an economically feasible way.

**Background of joint research with Japanese Co-PI**

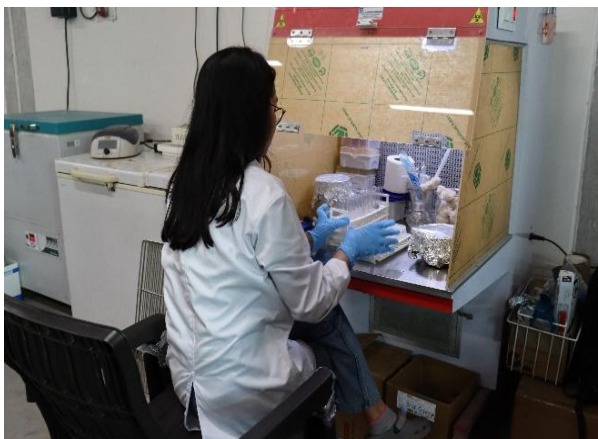
My Co-PI is Prof. Hiroyuki Futamata from Shizuoka University, and our topic of joint research is Understanding the Fate and Effects of Pharmaceutically Active Compounds, Per- and Polyfluoroalkyl Substances in Contaminated Water Bodies and in Treatment Plants.

Prof. Futamata visited our campus a couple of times during JICA FRIENDSHIP Phase 1 Project (FRIENDSHIP 1.0) and we decided to collaborate. In the above project, we complement each other. While I study the fate of antibiotics and other micropollutants in aquatic systems, Prof. Futamata

studies the effect of micropollutants on aquatic microorganisms, like the development of antibiotic-resistant bacteria and genes. We also have a separate DST-JSPS-funded project that supports visits of students and faculty to each other's laboratories.

#### What are the tips to have collaborated with Co-PI for so long?

- Mutual respect and understanding are key to having a good collaboration.
- If you convey your interest, intention, and expectations properly, things will move in the right direction.
- If you have a strong and serious intention, you can find ways.



#### What are the benefits of collaboration with Japanese Co-PI?

There are plenty of benefits from such collaborations.

For students, foreign exposure at the early stage of research is necessary. They come to know about the research environment and work culture of other countries through such visits. It boosts their confidence and changes their approach to research when they come back. I have seen the positive effects of such short-term visits on my students. These visits help them in setting new career goals. Two of my former Master of Technology students completed their Ph.D. at the University of Tokyo. One of my current Master of Technology students has also cleared the first round of interviews this year.

Collaboration with foreign universities improves the quality of publications because the collaborators complement each other in research. Such collaborations also help institutes improve their ranking.

#### Prospects regarding India-Japan collaboration

Recently, we have been able to establish research collaboration with a leading Japanese company in the area of wastewater treatment. This has altogether given a new dimension to our research. The industry gives feedback on the practical issues with the existing technologies and practices. With our advanced research facilities at IIT Hyderabad, we try to solve those issues. Proposals become stronger and research becomes more fruitful.

Do you recommend JICA Research Grant under FRIENDSHIP 2.0 to the other faculty members?



Yes, definitely. This is an excellent platform for the new faculty members to develop a strong network with Japanese universities and industries. Japan Desk provides guidance and enough instructions to initiate such processes.