UTRIP 2027 Host Laboratory Information

Department	Name and Title of Hosting Faculty Member	Laboratory Website	Research Topic & Research Description
Astronomy	Host: Itsuki SAKON (Associate Professor) Co-Host: Patricio SANHUEZA (Associate Professor)	Host's website: https://www.ioa.s.u-tokyo.ac.jp/~isakon/index.html Co-Host's website: https://groups.astron.s.u-tokyo.ac.jp/psanhueza/index.html	**Understanding of the nature and the lifecycle of organic dust in space based on combined approaches among infrared astronomy, laboratory astrophysics and quantum chemical calculations** This research project aims to investigate the origin and evolution of organic matter in space throughout its life cycle. Interstellar matter exists in the space between stars and consists mainly of gas, molecules, and dust, much of which originates from material ejected into space by evolved and dying stars. In this project, we focus particularly on the properties of organic dust. We investigate them through a combination of spectroscopic observations based on infrared astronomy, laboratory experiments synthesizing analogues of interstellar matter, and comparisons with molecular spectra of various organic species obtained from quantum chemical calculations. Ultimately, we aim to address fundamental questions concerning how organic matter was delivered to our Solar System and whether similar processes can occur universally in other planetary systems and environments throughout the Universe. **Special Academic Conditions Required for Research** **1) Prerequisite knowledge and/or specific skills, and required level of proficiency** A basic knowledge of mathematics, chemistry, and physics at the general undergraduate level is desirable. **2) Required major field(s) of study** A wide variety of research approaches are available, including infrared spectroscopic data analysis, laboratory astrophysics, and quantum chemical calculations. Therefore, no specific specialized knowledge or technical skills are required, provided that the applicant has a strong interest in astronomy, particularly in the study of interstellar matter. **3) Academic background or research project experience to be considered during selection** Preference will be given to applicants who have previous experience with infrared spectroscopic observations or spectroscopic analysis in the fields of astronomy or chemistry. **4) Selection and evaluation criteria (if any)** We hope that this research opportunity will help you further develop your own research interests. We especially welcome students who are interested in pursuing graduate studies in Japan and conducting research on topics related to this project.