申請者氏名	Requested Supervising Professor
山根　英司	Hideshi YAMANE Email: yamane@kwansei.ac.jp
研究題目	Title of the project
複素領域における微分方程式と特殊関数	Differential equations in the complex domain and special functions
博士研究員への要望・専門、経験等	Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests
代数的手法または漸近解析に長けている人が望ましい.	Experts in algebraic techniques or asymptotic analysis are welcome.
研究計画	Details on research project
博士研究員は独立して計画を立てて研究を進めることが望ましい.	A postdoc is expected to make a plan and carry out research independently.

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申請者氏名	**Requested Supervising Professor**
岡村　隆	Takashi OKAMURA Email: tokamura@kwansei.ac.jp
研究題目	**Title of the project**
重力理論および宇宙論	Gravitation and Cosmology
博士研究員への要望・専門、経験等	**Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests**
研究員自身の研究テーマ（重力理論や宇宙論に関する研究テーマであれば特に問いません）を追究してください。	
研究計画	**Details on research project**

申請者氏名	Requested Supervising Professor
瀬田　益道	Masumichi SETA Email: seta@kwansei.ac.jp
研究題目	Title of the project
南極天文学の開拓	Astronomy in Antarctica
博士研究員への要望・専門、経験等	Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests
物理学、天文学、電磁波工学等の基礎的学識を有し、南極大陸内陸部での電波天文学の研究に深い関心を有すること。	
研究計画	Details on research project
南極大陸内陸部は寒冷な高地が広がり、大気の吸収が少ないためサブミリ波からテラヘルツ帯の天体観測において地上で最良の環境である。現在、国立極地研究所や筑波大学等と協力して、南極での30cmのサブミ波望遠鏡を運用する研究を推進中で、12mのテラヘルツ望遠鏡の設置計画も進めている。これらの計画に従事し、装置開発及び関連の観測的研究で成果を出す研究員を求めている。	

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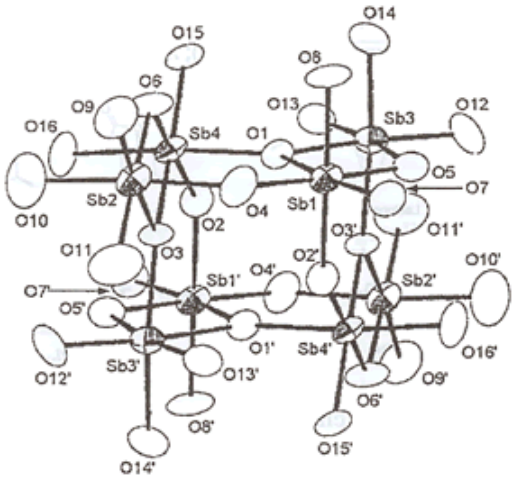
申請者氏名	Requested Supervising Professor
松浦　周二	Shuji MATSUURA Email: matsuura.shuji@kwansei.ac.jp
研究題目	Title of the project
宇宙赤外線の観測による宇宙進化の研究	Study of cosmic evolution based on the observation of the cosmic infrared radiation
博士研究員への要望・専門、経験等	Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests
天文学や宇宙物理学に関する観測やデータ解析の経験を有するか、または物理学の実験研究やデータ解析の経験を有することが望ましい。	Experience with observations and data analysis related to astronomy and astrophysics or experience with experimental research and data analysis in physics is preferred.
研究計画	Details on research project
当研究室では、ロケットや人工衛星および探査機を用いた宇宙赤外線の観測により、太陽系から宇宙初期までのさまざまな階層における宇宙の構造と進化を観測的に研究している。特に、黄道光、銀河光、宇宙背景放射の観測的な研究を進めている。今回募集する研究員は、当研究室が推進する可視光・赤外線の宇宙背景放射観測を目的とするロケット実験や衛星・探査機計画に参加し、観測装置の開発や観測データの解析に従事する。また、新たに設置した屋上ドーム望遠鏡を用いた観測研究の実施も推奨する。	We study the structure and evolution of the universe at various levels from the solar system to the early universe by observing cosmic infrared radiation in the visible and infrared using rockets, satellites, and planetary probes. The newly recruited researcher will participate in these projects, and will be engaged in the development of observational instruments and the analysis of observational data. He/She will also be encouraged to conduct observational research using the ground based telescope on campus.

申請者氏名	Requested Supervising Professor
小笠原　一禎	Kazuyoshi OGASAWARA Email: ogasawara@kwansei.ac.jp
研究題目	Title of the project
	Creation of prediction models for transition energies of rare earth ions in crystals for theoretical design of novel phosphors
博士研究員への要望・専門、経験等	Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests
	We are looking for a candidate with a doctoral degree in theoretical chemistry with a strong background in electronic structure theory and solid knowledge of rare earth doped phosphor materials. It is an advantage to have experience of first-principles calculations of rare earth ions in crystals based on configuration interaction calculations and creation of prediction models using machine learning.
研究計画	Details on research project
	In this project, we will conduct research on creating prediction models for transition energies of rare earth ions in crystals for the theoretical design of novel phosphors. We will perform systematic first-principles calculations of multiplet energy levels of rare earth ions in crystals using the discrete variational multielectron code developed in this laboratory. Using the obtained results as the training data, the machine learning models to predict electronic parameters from structural data will be created. We wil also create machine learning models to predict transition energies of rare earth ions in crystals from the predicted electronic parameters and structural data, using the experimental transition energies as the training data. Combining these prediction models, efficient and accurate prediction models based only on structural data will be created.

申請者氏名	Requested Supervising Professor
重藤　真介	Shinsuke SHIGETO Email: shigeto@kwansei.ac.jp
研究題目	**Title of the project**
分子分光と AI 技術による微生物1細胞解析	Single-cell analysis of microbes using molecular spectroscopy and AI technologies
博士研究員への要望・専門、経験等	**Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests**
1）博士の学位を有する方（取得見込含む） 2）顕微分光を用いた微生物細胞解析手法の開発に意欲を持って取り組める方 3）微生物培養または機械学習の経験を有していることが望ましい	The candidate should have (1) a PhD in chemistry, agricultural science, biology, or a related field; (2) interest in developing novel methods for single microbial cell analysis by means of microspectroscopic techniques; and (3) experience with cell culture or machine learning.
研究計画	**Details on research project**
本研究では、1細胞から得たラマン・自家蛍光スペクトルデータの機械学習により、微生物の種や機能を非破壊的に解析する新たな手法を開発し、多くの未知種を含む環境中の微生物に応用します。これまでに科学研究費補助金（新学術領域研究）の助成を受け、モデル細菌およびモデルアーキアを対象とした基盤研究を行ってきました。それを土壌・海洋中の未知微生物へと広く展開すべく、分光測定および機械学習モデルの高度化に取り組みます。また、極限環境における微生物の振る舞いを1細胞レベルで明らかにするため、高圧などの条件下での顕微分光測定の実現を目指します。	This project aims to develop novel methods for nondestructive analysis of microbial identity and function using machine learning models constructed from Raman/autofluorescence spectra of single cells, and to apply the developed method to the ‘microbial dark matter’. The candidate will lead efforts to advance the spectroscopic methods and machine learning models we have previously developed (e.g. *iScience* **24**, 102975 (2021)) such that they become applicable to unknown soil and marine microbes. Besides, the candidate will study microbial cells under extreme conditions, such as high pressure.

申請者氏名	**Requested Supervising Professor**
矢ケ崎　篤	Atsushi YAGASAKI
研究題目	**Title of the project**
	Chemistry of Molecular Oxides
博士研究員への要望・専門、経験等	**Qualifications for Postdoctoral Fellow including academic and non-academic background, research fields and interests**
	Must have experience in synthetic chemistry, either inorganic or organic. Experience of NMR, x-ray crystal structure determination, potentiometry, and other physical techniques is a plus.
研究計画	**Details on research project**
	Our research efforts are focused on the chemistry of molecular oxides. We are interested in the behavior of these compounds in solution as well as the synthesis of new type of molecular oxides. One area of current interest is the reaction chemistry of polyantimonates. We have recently isolated the first polyantimonate $[Sb_8O_{12}(OH)_{20}]^{4-}$ successfully, and we believe this compound will serve as an entry to a new field in chemistry. Efforts are also underway to elucidate solution dynamics and equilibria of molecular oxides. Representative results have recently been published (*Inorg. Chem.* **1996**, 35, 5114; *Inorg. Chem.* **1997**, 36, 126).  Projects like the ones just described rely on the development of new synthetic and analytical protocols. Therefore considerable effort is focused on adapting advanced analytical techniques such as solution mutinuclear NMR spectroscopy to new inorganic systems. For further details, contact Dr. Atsushi Yagasaki at yagasaki@kwansei.ac.jp or 81(Japan)-79-565-9077 (FAX).