【化学・バイオ工学分野】

教育研究分野名	内 容		教	〔員	名
エネルギー変換工学	エネルギーデバイスとしての電池およびキャパシタを構成する物質の設計と構造の 最適化ならびにその生産技術の情報マネジメントに関する教育・研究	准教技	受 寸	左花	和宏
有機機能化学	有機分子に関する分子認識, 触媒作用, 輸送, 分子デバイス, 自己組織化等に関する教育・研究	教授	そ 信	尹藤	和明
環境•分析化学	環境における物質の計測法および資源リサイクル支援技術の開発に関する教育研究	教授	更适	遠藤	昌敏
無機機能化学	雰囲気に応じて電気伝導性が変化したり、外部刺激によって発光することで人間の知覚をサポートするような「インテリジェントセラミックス」の創製に関する基礎と応用	教授	乏 乜	公嶋	雄太
生物資源化学	天然資源を有効に利用する有用な材料の設計と合成に関する研究と教育	教授	色 蒋	存合	文吾
有機機能材料	無機・高分子を含むナノ粒子・ナノ結晶の作製手法や応用展開を見据えた薄膜作製による 機能発現に関する教育・研究	教授	乏 垟	曽原	陽人
粉粒体材料工学	粉体の付着力,力学特性からスラリーの分散特性に関するDLVO理論を示すとともに,界面活性剤,水溶性高分子やカップリング剤など積極的な分散手法に関する教育と研究	教授	圣才	卜俣	光正
	機械的操作および粉体物性とハンドリングに関する教育・研究	助参	女 /	卜竹	直哉
細胞機能解析工学	細胞生物及び分子生物的解析技術を駆使した肺由来生理活性物質の機能解析と医療応用 に関する教育・研究	准教技	受具	具谷	玲子
生物資源化学	生体機能関連化学を基盤とした生体機能分子の制御と有機合成への応用ならびにインテリジェント・マテリアルの開発に関する教育・研究	教力	受オ	卞島	龍朗
生体機能修復学	疾患に由来する生体機能の修復を目的とした材料科学,細菌学と再生医学を融合した境界 領域に関する教育・研究	教力	受山	山本	修
生命有機化学	生命現象解明ならびに医薬品創成を目指した有機化合物の設計ならびに合成に関する教育・研究	教力	受 🖆	>野	博行
界面化学	ソフトインターフェースにおける物理化学的現象に関する研究	教力	受 里	野々木	付美宗
有機合成化学	有機金属反応を基軸とした新規合成反応及び新規合成ルートの確立に関する研究・教育. 及び、包接化学を用いた化合物の分離・分割に関する研究・教育	准教技	受 沥	皮多里	予豊平
光ナノ計測	光学顕微鏡技術を駆使した単一分子レベルでの高感度・高精度測定,超解像蛍光顕微鏡の開発,光ナノ計測の生体計測等への応用に関する教育・研究	准教技	受場	屈田	純一
タンパク質工学	遺伝子工学を駆使した工学的に有用なタンパク質の人工設計,および構造形成原理の解明に関する教育・研究	教授	· 其	真壁	幸樹
生体機能材料工学	生体組織の仕組みに学ぶ硬組織代替・修復支援材料の設計, 創製, 評価に関する教育 ・研究	准教技	受 川	 井	貴裕
応用微生物学	微生物を利用した食品、医薬品や環境技術に関する教育・研究	准教技	受 夕	 天野	成和

【情報・エレクトロニクス分野】

教育研究分野名	内 容			教 員	名
静電気・電気エネルギ ー工学	気体放電を含む高電界現象の解明と,機械加工・塗装等への工学的応用に関する教育・研究	准教	效授	杉本	俊之
半導体材料・ デバイス工学	ナノレベルで制御された機能性材料を用いた超高速, 発電, 新機能デバイスに関する教育・ 研究	教	授	廣瀬	文彦
	気体-固体表面反応,特に,気体原子・分子の吸着・引抜き現象の理解とそれに基 づいた新規半導体デバイスの作製と応用に関する教育・研究	准教	效授	成田	克
磁性材料・デバイス工学	遷移金属や希土類金属の金属間化合物の磁気的・電気的・熱的性質に関する教育・研究	准孝	效授	安達	義也
	ナノ構造制御手法である薄膜プロセスを用いた磁性材料の磁気特性および輸送特性に関す る教育と研究	准教	效授	小池	邦博
超伝導材料・ デバイス工学	超伝導に関する基礎研究及び超伝導高周波デバイスや高感度ジョセフソン接合等の応用に 関する教育・研究	教	授	齊藤	敦
高電圧プラズマ工学	高電圧大電力極短パルスの発生および高電圧パルス印加時に物質, 生物細胞に起こる電磁界現象, プラズマ現象の解明と利用に関する教育・研究	准教	效授	南谷	靖史
光通信工学	光導波路を利用した高機能な光信号処理技術および光通信技術と,電磁界計算を用いた 光機能回路の設計技術に関する教育・研究	教	授	高野	勝美
数理情報	要素分割を必要としない偏微分方程式の数値解法とその工学的問題への応用に関する教育・研究	准教	效授	齋藤	歩
確率的情報処理	確率モデルを用いた統計処理計算アルゴリズムの解析と, 統計的データサイエンスへの応用に関する教育・研究	教	授	安田	宗樹
数理物理学	数理物理学の可解模型の厳密解の構成のための数学に関する教育・研究	教	授	小島	武夫
情報計測及び画像工学	心理物理的手法を用いた知覚情報処理メカニズムの解明,及び色彩科学や照明・画像工学への応用技術に関する教育・研究	教	授	山内	泰樹
	時系列信号および画像データより所望の情報を獲得するための計算機アルゴリズムとその医 学データへの応用に関する教育・研究	教	授	深見	忠典
	音響波を用いた非破壊検査の技術およびシステムを理解するとともに実用されている信号処理技術や画像処理法に関する教育・研究	准教	效授	柳田	裕隆
光計測及び画像工学	光波を用いた高機能生体センシング技術と画像情報処理技術の融合による先端計測技術と その新しい応用に関する教育・研究	教	授	佐藤	学
計算論的神経科学·数理 工学	脳の数理モデル・非線形力学系の解析・システム最適化に関する教育・研究	准勢	效授	久保日	田繁
半導体ナノ材料・エネル ギーデバイス工学	半導体ナノ材料の構造に着目した機能材開発とエネルギーデバイスへの応用に関する教育・研究	准教	效授	有馬 アハン	ホ゛シール マト゛
非線型現象科学	自然界に存在する様々な非線型現象に伴う創発・自己組織化に関する教育・研究	准孝	效授	田中	敦
システム制御及び ファジィ・ニューラル ネットワーク	高周波無線通信工学の概論及び無線周波RF-CMOSIC設計理論と、これら最先端通信技術の生体情報信号処理システムなどへの応用に関する教育・研究	教	授	横山	道央
数理情報	数値電磁界解析の高性能解法とその工学的応用に関する教育・研究	助	教	高山	彰優
高効率情報処理集積回 路及び集積化センサ・シ ステム	CMOS技術を応用した多目的用途集積化センサとエネルギー効率の良い情報処理集積回路の設計理論・試作評価、及びこれらのIoTシステム分野への応用に関する教育・研究	助	教	原田	知親

【機械システム工学分野】

教育研究分野名	内 容			教 員	名
ロボティクス及び	テレロボティクス・バーチャルリアリティに関する研究・教育	教	授	妻木	勇一
機械運動制御工学	移動ロボットの機構,制御手法およびその応用に関する教育・研究	教	授	水戸	部和久
	機巧学を応用したロボットの新規機能の創出に関する教育・研究	教	授	多田	 喂理一郎
材料力性工学及び計算 材料科学	大変形を前提とした非弾性材料の構成式の開発・改良とその数値シミュレーションへの導入 及びそれらの材料挙動予測への応用に関する教育・研究	教	授	黒田	充紀
	計算機シミュレーションに基づく材料の結晶構造, 微視組織, 機械的性質および変形・強度 特性の予測・評価手法に関する教育・研究	教	授	上原	拓也
	固体材料のミクローメゾーマクロ変形挙動, マイクロ構造体の作製, マイクロセンサ・アクチュ エータの開発に関する教育・研究	教	授	村澤	剛
先端材料工学	生体適合性ソフト&ウェット材料の創製と機械への応用、光学的手法を活用した生体含水軟組織の構造と機構解明、生体を模倣したソフトマシン開発に関する教育・研究	教	授	古川	英光
熱流体工学及び移動現 象工学	磁気力による電気伝導性流体および非電気伝導性流体の熱伝達制御,生体内の光伝播特性の解明,熱流体数値シミュレーションおよび固体の比熱容量測定に関する教育・研究	教	授	赤松	正人
	熱流体現象の解析と制御、マイクロスケールの熱流体現象に関する教育・研究	教	授	鹿野	一郎
流体システム工学	最先端的な知的流体情報処理技術の開発による乱流,はく離流,多重スケール渦,混相流,生物流体,自動車周りの流れなどの複雑系流動現象の新たな解明と応用に関する教育・研究	教	授	李鹿	輝
マイクロナノ機械工学	MEMS(Micro Electro Mechanical Systems)センサ, アクチュエータ, マイクロ・ナノロボティクス, およびこれらの基盤となるマイクロ・ナノ微細加工プロセスに関する教育・研究	教	授	峯田	貴
スマートマイクロ構造工学	微細な泡、カプセル、粒子等が有する基本構造の解明および固有の機能を生かした応用技 術に関する教育と研究	教	授	幕田	寿典
バイオロボティクス	生物を規範とする柔軟なメカニズムと行動生成能力を持つロボットおよび細胞の微細操作を可能にするマイクロハンドに関する教育・研究	教	授	井上	健司
再生医療工学	再生医療工学における細胞機械生物学、細胞3次元培養バイオリアクタおよび心筋再生組織の構築に関する研究・教育	教	授	馮忠	3.剛
医用X線イメージング 及び医用画像処理	放射光X線を用いた新しい原理に基づく医用イメージング方式および医用画像から臨床に 有用な情報を自動的に抽出するための情報処理手法に関する教育・研究	教	授	湯浅	哲也
熱流体工学及びふく射伝 熱	太陽光熱回収、防災技術、宇宙機熱設計や光熱癌治療などの熱利用技術に資するふく射 伝熱制御技術に関する教育・研究	准勢	效授	江目	宏樹
レーザー工学及びマイク ロナノ工学	微小空間で起こる光学現象を基盤とした微小物体の光操作、光加工、光計測の新原理創出 に関する教育・研究	准勢	女授	西山	宏昭
生体分子機能工学	生物運動の基盤となるモータータンパク質の機能解析とそれらを利用したナノ テクノロジーに 関する教育・研究	准教	效授	羽鳥	晋由
システム制御及び ファジィ・ニューラル ネットワーク	適応制御,ロバスト制御,ハイブリットシステム理論に関する教育・研究	准教	效授	村松	鋭一
生体計測及び画像工学	生命科学研究のための高度画像計測技術と計算機応用技術を用いた光学的センシングシステムの開発と応用に関する教育・研究	准教	效授	渡部	裕輝

【建築・デザイン・マネジメント分野】

教育研究分野名	内 容	教 員 名
建築計画学	歴史的建造物の造形原理の理解と、町並みにおける景観形成の在り方と伝統的建築空間の 保存・活用に関する研究と教育	教 授 永井 康雄
	特に民家や社寺建築における伝統木造構法についての部材の構成原理や構成方法に関 する研究と教育	助 教 濱 定史
建築構造工学	最先端の建築構造設計手法と建物・地盤の地震応答や動的相互作用など時系列データの 分析に関する研究と教育	教 授 三辻 和弥
政策モデル特論	地域の実態を把握・検証し、課題を洗い出すとともに、課題解決にむけた手法に関する研究 と教育	准教授 高澤 由美
建築デザイン学	建築デザインにおける設計理論の構築と建築・都市空間の構成要素の数理的解析に関する研究と教育	准教授 宗政 由桐

[Applied Chemistry, Chemical Engineering, and Biochemical Engineering]

Primary Academic Advisor

* If you are applying for admission to the doctoral program, please select one of the faculty members listed here in the "Name of Desired Supervising Instructor" section of the application form.

	instead field in the Thanke of Desired Supervising instructor Section of the app	
Field	Contents of Education and Research	Instructors
Energy Conversion	Optimization of components design and structure of energy storage devices such	Kazuhiro Tachibana,
Engineering	as batteries or capacitors, and information management of the manufacturing	Assoc Prof.
	technologies of those devices	
Organic Functional	Molecular recognition, catalytic functions, transport, and self-organization of	Kazuaki Ito, Prof.
Chemistry	organic molecules and organic molecular devices	
Environmental and	The development of measurement methods for substances in the environment	Masatoshi Endo, Prof.
analytical chemistry	and resource recycling support technology	
Inorganic functional	Basics and applications of the creation of "intelligent ceramics" that change their	Yuta Matsushima, Prof.
chemistry	electric conductivity according to the atmosphere, or emit luminescence against	1 1000 17100000000000000000000000000000
Chemistry	external stimuli such as applied electric fields and UV irradiation	
Bioresource	Design and synthesis of functional materials using natural resources	Bungo Ochiai, Prof.
chemistry		Al'A Maril Dic
Organic functional	Education and research about fabrication method of nanoparticles and	Akito Masuhara, Prof.
materials	nanocrystals including inorganic and polymer materials, and the application by	
	layered structure of their nano-materials	
Powder and particle	From kinetic property and adhesive force of the powders to the dispersion	Mitsumasa- Kimata, Prof.
materials	property using DLVO theory and, slurry dispersion effects of the surfactant, the	
	water-soluble polymer and the coupling agent.	
	Machanical angustian abyvical anaparties and handling of navidans	Naorya Watalya
	Mechanical operation, physical properties, and handling of powders	Naoya Kotake, Assist Prof.
Cell function	Analysis of a naval hung desired hispative substance value call hislaries and	
	Analysis of a novel lung-derived bioactive substance using cell biological and	Reiko Kurotani,
analysis technology	molecular biological techniques	Assoc Prof.
Bioresource	Chemical approach to control molecules with biogenic functions, and application	Tatsuro Kijima, Prof.
chemistry	thereof to organic synthesis; and the development of intelligent materials	
Bio-functional	Study on multi-discipline fields of materials science, microbiology, and	Osamu Yamamoto, Prof.
Improvement	regenerative medicine aiming at improving vital human body functions	
Science	regenerative medicine unimig at improving vital natural cody randoms	
Organic Chemistry	Design and synthesis of organic compounds with the aim of analyzing biological	Hiroyuki Konno, Prof.
for Life Science	phenomena, and development of pharmaceutical products	
Surface Chemistry	Physical and chemical phenomena at soft interfaces	Yoshimune Nonomura,
	•	Prof.
Synthetic organic	Development of new synthetic methods and reliable synthetic routes based on	Bunpei Hatano,
chemistry	organometallic compounds. Optical resolution of chiral compounds using	Assoc Prof.
	inclusion compounds	
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Optical nanoscopy	Development of novel techniques in optical microscopy based on single	Jun-ichi Hotta,
	molecule spectroscopy and super-resolution fluorescence microscopy, and their	Assoc Prof.
	applications on biology and material science	
Protein Engineering	Protein design and engineering for development of useful novel proteins	Koki Makabe, Prof.
	based on recombinant gene manipulation techniques.	
Biofunctional	Studies on the mechanisms of human tissues, with the aim of designing and	Takahiro Kawai,
materials engineering	creating materials which can be used to replace or repair hard tissues, and	Assoc Prof.
	evaluating those materials	
Applied	Applic ation of microorganisms in food, medical, and environmental	Shigekazu Yano,
microbiology	biotechnology	Assoc Prof.

[Informatics and Electronics]

Primary Academic Advisor

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Contents of Education and Research	Instructors
nalysis of phenomena in a high electric field including those of gas discharge,	Toshiyuki Sugimoto,
nd application thereof to engineering operations such as mechanical processing	Assoc Prof.
nd painting	
esearches and developments on high-performance photovoltaic devices with	Fumihiko Hirose,
omically controlled film interfaces	Prof.
tudies on gas-solid surface reactions such as recombinative desorption from and	Yuzuru Narita,
ostraction at semiconductor surfaces, and developments on new semiconductor	Assoc Prof.
evice based on surface science	
lagnetic, electric and thermal properties of intermetallic compounds of transition	Yoshiya Adachi,
netals or rare earth metals	Assoc Prof.
lagnetic properties and transport properties of the magnetic materials created	Kunihiro Koike,
rough thin film processing as a nano-structure control method	Assoc Prof.
acia studies on superconductivity and application to high frequency	Atsushi Saito,Prof.
	Aususiii Salio,i 101.
aperconducting devices and night-sensitivity Josephson Juneuons	
nalysis and utilization of the electromagnetic phenomena and plasma	Yasushi Minamitani,
•	Assoc Prof.
	7 6500 1 101.
	IZ 4 'T 1
	Katsumi Takano,
	Prof.
2 2	
•	Ayumu Saitoh,
chinique, and their applications in engineering fields	Assoc Prof.
ducation and research on probabilistic modeling and analysis of	Muneki Yasuda,
formation processing system and on application to the field of statistical data	Prof.
tience	
xactly solvable models associated with quantum groups and elliptic quantum	Takeo Kojima,
receif solvetore inocess associated with quantum groups and empire quantum	ranco regima,
	nalysis of phenomena in a high electric field including those of gas discharge, displication thereof to engineering operations such as mechanical processing displainting escarches and developments on high-performance photovoltaic devices with omically controlled film interfaces addies on gas-solid surface reactions such as recombinative desorption from and straction at semiconductor surfaces, and developments on new semiconductor vice based on surface science agnetic, electric and thermal properties of intermetallic compounds of transition etals or rare earth metals agnetic properties and transport properties of the magnetic materials created rough thin film processing as a nano-structure control method usic studies on superconductivity and application to high-frequency perconducting devices and high-sensitivity Josephson junctions analysis and utilization of the electromagnetic phenomena and plasma tenomena that affect materials or organic cells at the time of the generation of a gh-voltage, high-power ultra-short pulse or the impression of a high-voltage alse gh-performance optical signal processing and optical communication systems ing optical waveguides and optical integrated circuits designed by extromagnetic computing udies on numerical methods for partial differential equations using meshless chinique, and their applications in engineering fields ducation and research on probabilistic modeling and analysis of formation processing system and on application to the field of statistical data indice.

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processing LSI and technology and their application to the IoT system.	Energy-efficient	Education and research on designing and evaluating multi-purpose integrated	Tomochika Harada,
integrated sensor	information	sensors and energy-efficient information processing LSI using CMOS	Assist Prof.
	processing LSI and	technology and their application to the IoT system.	
device & system	integrated sensor		
	device & system		

[Mechanical Systems Engineering]

Primary Academic Advisor

* If you are applying for admission to the doctoral program, please select one of the faculty members listed here in the "Name of Desired Supervising Instructor" section of the application form.

Field	Contents of Education and Research	Instructors		
Robotics and	Telerobotics and virtual reality	Yuichi Tsumaki, Prof		
mechanical motion control engineering	Mechanism and control of mobile robots, and applications thereof	Kazuhisa Mitobe, Prof.		
	The education and research on the creation of new functions of robots by	Riichiro Tadakuma,		
	applying ingenious mechanisms	Prof.		
Mechanics of	Development and improvement of constitutive equations for inelastic materials	Mitsutoshi Kuroda,		
materials and	subject to large deformation; applications of the constitutive equations to numerical	Prof.		
computational	simulations; and simulations of metal forming processes			
materials science	Development of computational methods for estimation and evaluation of crystal structures, micro-structures, mechanical properties, deformation behaviors, and the strength of materials	Takuya Uehara,Prof.		
	Deformation behaviors at micro, mezzo and macro levels of solid-state materials, creation of micro-structures, and development of micro-sensor actuators	Go Murasawa, Prof.		
Advanced materials	Creation of bio-compatible soft and wet materials with new functions, application	Hidemitsu Furukawa,		
engineering	of those materials to machines, optical characterization of structures and	Prof.		
	mechanisms of water-containing tissues in living organisms, and development of bio-inspired soft machines			
Thermal-fluid	Studies on the heat transfer control of electroconducting and nonelectroconducting	Masato Akamatsu,		
engineering and	fluids by the magnetic force, the transient radiative transfer in a participating	Prof.		
transport	medium subjected to a pulse train, and the specific heat capacity measurement of			
phenomena	solid			
engineering	Analysis of thermal fluid phenomena and control of those phenomena; and micro-scale thermal fluid phenomena	Ichiro Kano, Prof.		
Fluid systems	Development of state-of-the-art intelligent fluid information processing	Akira Rinoshika,		
engineering	technologies, with the aim of analyzing, from new angles, the phenomena of diverse complex flows including turbulent flows, separated flows, multiple-scale vortexes, multiphase flows, biofluids, and flows around a motor vehicle, and applications thereof	Prof.		
Micro Nano	Development of MEMS (Micro Electro Mechanical Systems) sensors, actuators,	Takashi Mineta,		
Mechanical	micro/nano robotics, and micro/nano fabrication process technologies	Prof.		
Engineering				
Smart	Basics and applications of microstructures such as microbubbles, microcapsules,	Toshinori Makuta,		
Microstructure	and micro/nanoparticles	Prof.		
Engineering				
Biorobotics	Robots having flexible mechanisms and adaptive behavioral abilities similar to those of living creatures; and robotic microhands that enable micro manipulation of cells	Kenji Inoue,Prof.		

Tissue engineering	Stem cells, tissue construction, and culture bioreactors for regenerative medicine and myocardial regeneration	Feng Zhonggang Prof.
X-ray imaging and information	Development of medical imaging systems using synchrotron x-ray based on novel principles, and of image processing algorithms for clinical applications	Tetsuya Yuasa Prof.
Thermal-fluid engineering and radiative heat transfer	Radiative heat transfer control technology that contributes to heat utilization technology such as solar heat recovery, disaster prevention technology, spacecraft thermal design and photothermal cancer treatment.	Hiroki Gonome, Assoc. Prof.
Laser based processing and device engineering	Development of laser-based motion controls, processing and sensing based on nanostructured physics	Hiroaki Nishimura, Assoc. Prof.
Biomolecular functional engineering	Analysis of the functions of motility protein, which plays the central role in the motility systems of living creatures, and application thereof to nanotechnology	Kuniyuki Hatori, Assoc. Prof.
Systems and control engineering	Analysis and control of dynamical systems that include adaptive, nonlinear, and reaction-diffusion systems	Eiichi Muramatsu, Assoc. Prof.
Biological measurement and image engineering	Development and application of optical sensing systems using high-performance image measurement technologies and computer applied technologies in the field of life science	Yuuki Watanabe, Assoc.Prof.

[Architecture and Building Science, Design, and Management]

Primary Academic Advisor

** If you are applying for admission to the doctoral program, please select one of the faculty members listed here in the "Name of Desired Supervising Instructor" section of the application form.

Field	Contents of Education and Research	Instructors
Advanced	Research and education on understanding the modeling principles of historical	Yasuo Nagai, Prof.
Architectural	buildings, the landscapes forming in townscapes, and preservation and utilization of	
Planning	traditional architectural spaces.	
	Research and education on the principle and method of the traditional wooden	Sadashi Hama,
	construction in private houses, shrines and temples.	Assist Prof.
Advanced	Research and education on cutting-edge building structure design methods and	Kazuya Mitsuji, Prof.
Structural	analysis of time history data such as seismic response and dynamic soil-structure	
Engineering in	interaction on building.	
Building		
Advanced	Research and education on understanding and verifying the actual conditions of the	Yumi Takasawa,
Innovation Policy	region, identifying issues, and developing methods to solve problems	Assoc. Prof.
Advanced	Research and education on the construction of design theory in architectural design	Yuki Munemasa,
Architectural	and mathematical analysis of the elements of architectural and urban space.	Assoc. Prof.
Designing		