College of Science & Engineering UROP Projects

Proposal Title	Fac Dept Name	College
Actuator Modeling for small unmanned aerial vehicles	Aerospace Engineering & Mechanics	Science & Engineering
Efficient High Altitude Balloon Payload Recovery using Guidance Navigation and Control (GNC)	Aerospace Engineering & Mechanics	Science & Engineering
Keplerien Orbit Gravity Tractor Maneuver for Asteroid Impact Mitigation	Aerospace Engineering & Mechanics	Science & Engineering
Fluid-particle Interactions in Homogeneous, Isotropic Turbulence	Aerospace Engineering & Mechanics	Science & Engineering
Differential X-ray and Gamma-ray Positioning Systems for Nano-satellites	Aerospace Engineering & Mechanics	Science & Engineering
Design of a Model Wind Turbine for Wind Farm Control	Aerospace Engineering & Mechanics	Science & Engineering
Calibration of True Airspeed Using GPS	Aerospace Engineering & Mechanics	Science & Engineering
Optimal Distribution of Impulsive Forces on Ovoid Objects	Aerospace Engineering & Mechanics	Science & Engineering
Efficient Use of Autorotation for Control of Descent Rate	Aerospace Engineering & Mechanics	Science & Engineering
Wingtip Vortex Reduction	Aerospace Engineering & Mechanics	Science & Engineering
Exploring the Structure-Function Relationship of Airways in Human Lungs	Aerospace Engineering & Mechanics	Science & Engineering
Spitzer Infrared Intensive Transients Survey	Astronomy	Science & Engineering
Infrared Observations of Explosive Transients	Astronomy	Science & Engineering
SPIRITS (Spitzer InfraRed Intensive Transients Survey) Collaborator & O'Brien Observatory Instructor	Astronomy	Science & Engineering
Transient and Variable Stars: Multi-Epoch Examination	Astronomy	Science & Engineering
The Pursuit of Transients and Variables in the Infrared	Astronomy	Science & Engineering
Polarization of Radio Galaxies	Astronomy	Science & Engineering
Optimize 3D Bio-Printer for Cell Integration in Cardiac Repair	Biomedical Engineering	Science & Engineering
Cell Structure Based on Cell Shape	Biomedical Engineering	Science & Engineering
Design & Development of Commisure to Limit Paravalvular Leak in Tissue-Engineered Transcatheter Heart Valves	Biomedical Engineering	Science & Engineering
Quantifying the Effects of Tissue Anisotropy on Deep Brain Stimulation in the Subthalamic Nucleus Area	Biomedical Engineering	Science & Engineering
Comparison of Motor Imagery Schemes for 2 Dimensional Control of an Electroencephalogry-based Brain Computer Interface	Biomedical Engineering	Science & Engineering
Developing a Python-based Open-Source Stereotactic Surgical Planning Software Package	Biomedical Engineering	Science & Engineering
Developing an In-vitro System of Standard Testing and Real-time Data Analyzation for Novel Tissue-engineered Heart Valve	Biomedical Engineering	Science & Engineering
Measuring the Invasiveness of Cancer-Stem Cell Fusion Products with an Inverted Vertical Invasion Assay	Biomedical Engineering	Science & Engineering
Creating a Microfluid-Based System to Form Scaffold-Free Highly Organized 3-Dimensional Skeletal Muscle	Biomedical Engineering	Science & Engineering
On-demand Drug Delivery Triggered by Specific Binding of Target Cells	Biomedical Engineering	Science & Engineering
Acoustic Stimulation Paired with Body Stimulation for Modulating Tinnitus	Biomedical Engineering	Science & Engineering
Location-Dependent Mechanics of the Ascending Aorta	Biomedical Engineering	Science & Engineering
Optimizing Enzymatic Balance in Crocin Biosoynthesis	Biomedical Engineering	Science & Engineering
Analyzing the Tissue Damage Effects of Ultrasound Neuromodulation	Biomedical Engineering	Science & Engineering
The Turbidostat as a Continuous Evolution Platform to Engineer Proteins	Biomedical Engineering	Science & Engineering
Spices in Picha: Engineering Saffron Production in Yeast	Biomedical Engineering	Science & Engineering
Multi-Scale Modeling of Stress and Fatigue in the Inner and Outer Curvature of Ascending Thoracic Aortic Aneurysms	Biomedical Engineering	Science & Engineering
Modeling the Shear Force Exerted on the Facet Capsular Ligament in the Lumbar Spine.	Biomedical Engineering	Science & Engineering
Surface modification with bioactive peptides through glycidyl-methacrylate-crosslinking to improve cell adhesion	Biomedical Engineering	Science & Engineering

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Design, Synthesis, and Characterization of Non-Newtonian Hybrid Polymer Drug Delivery System	Biomedical Engineering	Science & Engineering
Study on the Combined Biomechanical and Chemical Stresses from Blast Injuries and How They Affect the Occurrence of Cerebral Vasospasm	Biomedical Engineering	Science & Engineering
Effects of Microtubule-Trageting Agents on Cell Traction	Biomedical Engineering	Science & Engineering
Evaluating Neuromodulation in the Mesencephalic Locomotor Region Using Subject-specific Computational Models of DBS	Biomedical Engineering	Science & Engineering
The Effects of PDMS Stiffness on the Area, Shape, and Motility of GBM Cells	Biomedical Engineering	Science & Engineering
Multiaxial Forces in Ascending Thoracic Aortic Aneurysms	Biomedical Engineering	Science & Engineering
Microfludics in Cell Seperation	Biomedical Engineering	Science & Engineering
Using Microarray Data to Inform and Identify Breast Cancer Therapy Targets	Biomedical Engineering	Science & Engineering
Proposed In Vitro Fatigue Testing of a Novel Bioprosthetic Tissue-Engineered Aortic Heart Valve	Biomedical Engineering	Science & Engineering
Optimization of Endothelial Cell Seeding onto Engineered Tissue Valve	Biomedical Engineering	Science & Engineering
U251 Glioma Durotaxis	Biomedical Engineering	Science & Engineering
cation and Correlation of Collagen Fiber Architecture and Tumor Invasion and Progression in Pancreatic Adenocarcinoma	Biomedical Engineering	Science & Engineering
An Inverted Vertical Migration Assay for Use with Breast Cancer and Mesenchymal Stem Cell Fusion Products Part II	Biomedical Engineering	Science & Engineering
A Validation of the Role of Adenosine in Seizure Termination.	Biomedical Engineering	Science & Engineering
Shear Forces in Ascending Thoracic Aortic Aneurysms	Biomedical Engineering	Science & Engineering
Electronically Controlled 3D Printed Microdrive for MicroElectrode Insertion	Biomedical Engineering	Science & Engineering
Biofilms for Clearing Amonia-nitrogen in Aquaculture Systems	Bioproducts and Biosystems Engineering	Science & Engineering
Cover Crop Runoff Response	Bioproducts and Biosystems Engineering	Science & Engineering
Improve the Efficiency of the Time Integrated Mass Flow Sampler at Capturing Fine Clay Soil particles	Bioproducts and Biosystems Engineering	Science & Engineering
Converting Organic Nitrogen and Recover It as Ammonium by an Artificial Intestine	Bioproducts and Biosystems Engineering	Science & Engineering
Measurement of the Surface Energetics of Microbial Community in Biofilm Formation	Bioproducts and Biosystems Engineering	Science & Engineering
Testing Sediment Microbial Fuel Cell and its Power Management System for Power Supply Use	Bioproducts and Biosystems Engineering	Science & Engineering
Solubilization of Inorganic Phosphates by Fungi Cultivated From Soybean Soil	Bioproducts and Biosystems Engineering	Science & Engineering
Nanocellulose-soybean Oil Composites via UV-initiated Free Radical Polymerization	Bioproducts and Biosystems Engineering	Science & Engineering
Sour Cherry Oil Characterization for Potential Cosmetic and Nutritional Applications (Continuation of UROP completed in Spring 2014)	Bioproducts and Biosystems Engineering	Science & Engineering
Erodibility of Soil and Geological Materials; Quantification and its Impact on the Hydrologic Systems of the Minnesota River Basin	Bioproducts and Biosystems Engineering	Science & Engineering
Phytate Extraction from Corn Ethanol Co-products	Bioproducts and Biosystems Engineering	Science & Engineering
Analyzing the Effects of Increased Antibiotic Intake on the Gut Microbiome Diversity and Inflammation	Biotechnology Institute	Science & Engineering
Investigating the Molecular Basis for Breast Cancer Predisposition via Next Generation Sequence Data	Cancer Center	Science & Engineering
Kinetic, Mechanistic and Site Requirement Study of Oxygen-Modified Molybdenum Carbide for Catalytic Phenol Formation from Anisole	Chemical Engineering & Materials Science	Science & Engineering
Hybrid Molecular Beam Epitaxy and La-Doping of BaSnO3 Thin Films	Chemical Engineering & Materials Science	Science & Engineering
Engineering Nonphosphorylative Metabolism into E. coli for Biosynthesis of Value-added Chemicals from Lignocellulosic Feedstocks	Chemical Engineering & Materials Science	Science & Engineering
Maximum Entropy Production and Evolution of Complex Systems	Chemical Engineering & Materials Science	Science & Engineering
Maximum Entropy Production and Evolution of Complex Systems	Chemical Engineering & Materials Science	Science & Engineering

Proposal Title	Fac Dept Name	College
Interfacial Tension of Lecithin Dispersants	Chemical Engineering & Materials Science	Science & Engineering
Photovoltaic Applications for Organo-Tin Halide Perovskite	Chemical Engineering & Materials Science	Science & Engineering
Real-Time Rheological Analysis of a UV-Curable Polymer	Chemical Engineering & Materials Science	Science & Engineering
Engineering the Superconductivity Temperature of Copper Sulfides Via Nickel Alloying	Chemical Engineering & Materials Science	Science & Engineering
Dopant Location Simulation in Boron-Doped Silicon and Aluminum-Doped Zinc Oxied	Chemical Engineering & Materials Science	Science & Engineering
Embedding Metal Nanoparticles in Polymer Scaffolds for Treatment of Metastatic Breast Cancer	Chemical Engineering & Materials Science	Science & Engineering
Stabilitiy Engineering of the Fibronectin Domain	Chemical Engineering & Materials Science	Science & Engineering
Applications of Degradable Polymers	Chemical Engineering & Materials Science	Science & Engineering
Effects of ZnS n-type Material Thickness on Solar Cell Performance	Chemical Engineering & Materials Science	Science & Engineering
Lecithin Oil Dispersants	Chemical Engineering & Materials Science	Science & Engineering
Comparative Microstructure Behavior of Lecithin vs. DOSS in Oil-Water Systems	Chemical Engineering & Materials Science	Science & Engineering
Rapid Synthesis of CZTS Nanocrystals for Solar Cells & Associated Environmental Nanotoxicity	Chemical Engineering & Materials Science	Science & Engineering
Lecithin-Based Oil Dispersants	Chemical Engineering & Materials Science	Science & Engineering
Co-continuous Polymer Blends Stabilized by Interfacial Silica Nanoparticles	Chemical Engineering & Materials Science	Science & Engineering
Systematic Identification of Protein Scaffolds for Molecular Recognition	Chemical Engineering & Materials Science	Science & Engineering
Effects of Molybdenum Sulfide on CZTS Thin Films	Chemical Engineering & Materials Science	Science & Engineering
Granular Project	Chemical Engineering & Materials Science	Science & Engineering
Effects of Molybdenum Substrate Sulfidation on Cu2ZnSnS4 Solar Cell Performance	Chemical Engineering & Materials Science	Science & Engineering
Reprogramming of Human Stem Cells to Hepatocytes for Clincal and Industrial Applications	Chemical Engineering & Materials Science	Science & Engineering
Research on Collapse of Granular Particle Column	Chemical Engineering & Materials Science	Science & Engineering
Precisely Shaped Spherical Particles	Chemical Engineering & Materials Science	Science & Engineering
Photovoltaic Applications for Organo-metal Halid Perovskite	Chemical Engineering & Materials Science	Science & Engineering
High Copy Number pVIII Phage Display of Fibronectin Domains	Chemical Engineering & Materials Science	Science & Engineering
Modeling CHO Cell Metabolism	Chemical Engineering & Materials Science	Science & Engineering
Explosion Cratering Under Granular Surface	Chemical Engineering & Materials Science	Science & Engineering
PIV Measurements of Granular Collapse Under Water Using Refractive Index Matching	Chemical Engineering & Materials Science	Science & Engineering
Development of a Green Suzuki-Miyuara Coupling Reaction for the Organic Chemistry Lab	Chemistry	Science & Engineering
The Use of Cellulosic Polymers to Keep Small Molecules in Solution	Chemistry	Science & Engineering
Voltammetric Sensor for the Detection of Polycationic Cations for Environmental Remediation	Chemistry	Science & Engineering
Tailoring Mechanical Properties of Hierarchically Porous Polymers for Applicationsin Aqueous Separations	Chemistry	Science & Engineering

Proposal Title	Fac Dept Name	College
Mass Spectrometry-Based Structural Analysis of Uncharacterized Bioactive Natural Products	Chemistry	Science & Engineering
Hexadehydro-Diels-Alder Synthesis of Highly Conjugated Compounds for Organic LEDs	Chemistry	Science & Engineering
Prenylation Labeling Efficieny and Optimization Using Diazarine Analogs	Chemistry	Science & Engineering
Synthesis of Complex Products Though a 1 Pot Diels Alden Reaction	Chemistry	Science & Engineering
New Fluorescent Compounds for Electronic Devices Using the HDDA Reaction of Tetraphenylcyclone Analogs	Chemistry	Science & Engineering
The Role of Thin Film Morphology on Organic Photovoltaic Performance	Chemistry	Science & Engineering
Degradable Polyurethane Elastomers from Renewable Polyols	Chemistry	Science & Engineering
Turnover Rate, Regioselectivity, and Substrate Tolerance Using a Series of Titanium Imidos	Chemistry	Science & Engineering
A New Approach Towards the Synthesis of Diels-Alder Reactions of 2-Cycloalkenylthiophenes With N-Phenyl Maleimides	Chemistry	Science & Engineering
Phase Behavior of Polyolefin Mixtures	Chemistry	Science & Engineering
Synthesizing Bilayer Graphene Nanoribbons and Investigating Corresponding Plasmonic Phenomenon	Chemistry	Science & Engineering
Longitudinal Profiling of Mitochondrial Membrane Potential in C. elegans	Chemistry	Science & Engineering
Optimal catalyst loadings for a controlled ring opening polymerization of 3-methyl-1,3,dioxane-4one	Chemistry	Science & Engineering
In situ Assessment of Nanoparticle Toxicity and Association to Bacterial Cells using Flow Cytometry	Chemistry	Science & Engineering
Oxygen Sensing in Tissues and Implantable Grafts: Development of a Local Temperature Sensor from a Mesoporous Silica Nanoparticle Platform	Chemistry	Science & Engineering
Further Investigation of the Synthesis and Reactivity of Bimetallic Catalysts for the Polymerization of Ethylene	Chemistry	Science & Engineering
Synthesis of a Phosphodiesterase-4 Inhibitor	Chemistry	Science & Engineering
Structure-Activity Relationship Investigation of a Small Molecule Known to Bind to KIX	Chemistry	Science & Engineering
Tandem Polymerization and Crosslinking of ε-Caprolactone	Chemistry	Science & Engineering
Isolation of Actinomycetes for Discovery of Novel Natural Products	Chemistry	Science & Engineering
Co-crystallization of Histidine Kinases with Newly Discovered Inhibitors	Chemistry	Science & Engineering
Buffer Optimization in Capillary Electrophoretic Separation of Amino Acids	Chemistry	Science & Engineering
Growth of Large Domain Size Graphene Monolayers on Copper Foils with Surface Oxygen by Low-Pressure Chemical Vapor Deposition	Chemistry	Science & Engineering
Longitudinal Profiling of Mitochondrial Membrane Potential in C. Elegans	Chemistry	Science & Engineering
Vibrational Coherences Driving Singlet Fission in Tetracene	Chemistry	Science & Engineering
Methylcellulose Solutions	Chemistry	Science & Engineering
Investigating the Synthesis and Reactivity of Bimetallic Catalysts for the Polymerization of Ethylene	Chemistry	Science & Engineering
Development of Light-activatable farnesyltransferase inhibitor	Chemistry	Science & Engineering
Synthesis and Self-Assembly of Bottlebrush Block Copolymers	Chemistry	Science & Engineering
Influence of Clay Minerals on Iron Oxide Reactivity for Application in Groundwater Remediation	Chemistry	Science & Engineering
Synthesis of a 7-substituted Farnesyl Analog	Chemistry	Science & Engineering
Synthesis of Cyclo-octene Analog for Enzymatic Labeling	Chemistry	Science & Engineering
MLAC Wastewater Treatment Alternative Analysis	Civil Engineering	Science & Engineering
Numerical Modeling of Cavity Expansion	Civil Engineering	Science & Engineering
Hydrophobicity of Chlorinated Natural Organic Matter and its Effect on Reductive Dechlorination	Civil Engineering	Science & Engineering
Dark production of Hydroxyl Radicals by Aeration of Anoxic Prairie Pothole Lake Water	Civil Engineering	Science & Engineering
A Synthesis of Approaches for Acoustic Sound Data Analysis	Civil Engineering	Science & Engineering
Cavity Expansion in Dunnville Sanstone	Civil Engineering	Science & Engineering
Patient-Specific Segmentation-Free Stress Analysis of a Human Tooth	Civil Engineering	Science & Engineering
Investigating the Implementation of TMP as a Probe for DOM Triplet States	Civil Engineering	Science & Engineering

Proposal Title	Fac Dept Name	College
Ramp Meter Conflict Zone Study	Civil Engineering	Science & Engineering
Dynamic Peer-to-Peer Edge Cloud for Mobile Devices	Computer Science & Engineering	Science & Engineering
Quantitively Assess the Impact on Spatial Perception and Functional Suitability Judgements of Eperiencing Dynamically Populated, as Opposed to Static or Unpopulated, IVEs (Immersive Virtual Environments)	Computer Science & Engineering	Science & Engineering
Social Norm Formation in Online Games	Computer Science & Engineering	Science & Engineering
Building Feeds in Recommender Systems	Computer Science & Engineering	Science & Engineering
Nonverbal Communication in Virtual Environments: Role of Visual Cues Such as Eye Gaze in Signaling Future Intent	Computer Science & Engineering	Science & Engineering
Implementation and Optimization of DP5: A Privacy Presence Service	Computer Science & Engineering	Science & Engineering
Examination of the Topological anonymity of Routing Based Anonymity system's users	Computer Science & Engineering	Science & Engineering
The Application of Training and Querying EEG Classifiers in Triggering Macroinstructions	Computer Science & Engineering	Science & Engineering
User Study of Blending Algorithms for Movie Recommendations	Computer Science & Engineering	Science & Engineering
A Generalized Implementation of Tree Rewriting with Attribute Grammars	Computer Science & Engineering	Science & Engineering
Towards Better Recommendations for MovieLens	Computer Science & Engineering	Science & Engineering
A Physical, Construction-Based Creativity Assessment Tool	Design, Housing, & Apparel	Science & Engineering
Investigation of HTLV-1 Particle Size and Gag Copy Number	Diagnostic and Biological Sciences	Science & Engineering
Untitled	Earth Sciences	Science & Engineering
Characterizing sulfide mineral-oxidizing microbial communities in the Duluth Complex	Earth Sciences	Science & Engineering
Design of Tunable Free-Standing Three-Dimensional Cylindrical Split-Ring Resonator with Two-Dimensional Graphene Material	Electrical & Computer Engineering	Science & Engineering
Implementing Cyclic Combinational Circuits with FPGAs	Electrical & Computer Engineering	Science & Engineering
3D Printed On-Chip Flow Chamber to Optimized Ultrasensitive Photonic Gas-Phase Chemical Sensor	Electrical & Computer Engineering	Science & Engineering
Decreasing Circuit Delay Using False Paths	Electrical & Computer Engineering	Science & Engineering
Sketch and validate for big data clustering: Analysis and validation of large-scale datasets.	Electrical & Computer Engineering	Science & Engineering
N/A	Electrical & Computer Engineering	Science & Engineering
A Study of Kerr Effect Self-Phasing in Fiber Lasers	Electrical & Computer Engineering	Science & Engineering
Parallel Computing of Signal Processing Algorithms on Magnetic Resonance Imaging	Electrical & Computer Engineering	Science & Engineering
Cyclic Combinational Circuits at the Functional Logic Level	Electrical & Computer Engineering	Science & Engineering
Testing Application Correctness on Frequency Overscaled Microcontrollers	Electrical & Computer Engineering	Science & Engineering
Measuring Time Dynamics of Self-Phasing in Fiber Lasers	Electrical & Computer Engineering	Science & Engineering
Fabrication of a Faultless PMMA, Chrome, Copper, and Silicon Substrate	Electrical & Computer Engineering	Science & Engineering
2-D Material Exfoliation and Alignment	Electrical & Computer Engineering	Science & Engineering
Analysis of Stochastic Computing Systems using Correlated Inputs	Electrical & Computer Engineering	Science & Engineering
Investigation and Characterization of Optical Coating Failure Under High Intensity Laser Irradiation	Electrical & Computer Engineering	Science & Engineering
The Effect of Temperature on the Brownian Relaxation Based Detection for Immunoassay Applications	Electrical & Computer Engineering	Science & Engineering
Detection of Prostate Cancer Tissue From MRI Imaging Data	Electrical & Computer Engineering	Science & Engineering
How Does Additional Bladder/Pelvic Pain Affect Daily Physical Functioning in Women With Vulvodynia?	Epidemiology and Community Health	Science & Engineering
Morphology, Ontogeny, and Intraspecific Trophic Niche Variation in the Skipjack Herring (Alosa Chysochloris)	Fisheries & Wildlife	Science & Engineering
Optimal Temperature, Pressure, and Composition Values to Attain Maximum Hydrogen Absorbancy in Feldspars	Geology & Geophysics	Science & Engineering
Tracking Fossil Populations of Perognathus	Geology & Geophysics	Science & Engineering
Determining Rates Dependent on Temperature and Humidity that Alter Iron Oxyhydroxides to Iron Oxides in the Chinese Loess Plateau	Geology & Geophysics	Science & Engineering
Investigation of Carbonate Biosignatures	Geology & Geophysics	Science & Engineering
Formation of Quartz Cement in Sandstone and Environmental Implications	Geology & Geophysics	Science & Engineering

Proposal Title	Fac Dept Name	College
Cost-effectiveness of Biological Concentration Monitoring in Inflammatory Bowel Disease	Health Policy and Management	Science & Engineering
The Impact of the METRO Green Line on Residential Property Values in the Twin Cities	Industrial and Systems Engineering	Science & Engineering
Flexible, Eco-Friendly and Profitable Car Sharing Contracts: An Investigation into Consumers' Behavior	Industrial and Systems Engineering	Science & Engineering
Pro-Inflammatory Cytokines Affecting Renal Inflammation and Hypertension.	Integrative Biology and Physiology	Science & Engineering
Do Blacks Carry Different Strains of Epstein-Barr Virus than Whites?	Laboratory Medicine & Pathology	Science & Engineering
Dispersive Quantization in the Linear FPU and KdV Equations	Mathematics	Science & Engineering
Analyze Geometric Patterns and Physical Structure of Folded and Unfolded Model of Rigid Origami	Mathematics	Science & Engineering
Simulation and study of a paleoclimate model of ice-albedo feedback	Mathematics	Science & Engineering
New Methods for Computing Bound States for Bose-Einstein Condensates	Mathematics	Science & Engineering
Microexplosion Combustion Behavior of Blended Soybean Oil, Butanol, and Propanol Droplets	Mechanical and Industrial Engineering-D	Science & Engineering
Investigation into the Internal Fluid Dynamics of an Impacting Drop	Mechanical Engineering	Science & Engineering
Turbulent Flow Interactions with Wind Turbines	Mechanical Engineering	Science & Engineering
Construction of Soft Actuators for use in Transcatheter Procedures	Mechanical Engineering	Science & Engineering
I-Cord Actuators - Tailorable Shape Memory Spring Actuators	Mechanical Engineering	Science & Engineering
The Utilization of Algaes' Swimming Trajectories to Determine Metabolic State and Lipid Production	Mechanical Engineering	Science & Engineering
Experimental Validation of an Analytical Model for O-ring Friction and Leakage at High Pressure	Mechanical Engineering	Science & Engineering
Geometric Parameter Study of Rib Knit Pattern Active Knits	Mechanical Engineering	Science & Engineering
Measuring Tissue Stress and Strain in vivo	Mechanical Engineering	Science & Engineering
Using Polymers to Clean Water	Mechanical Engineering	Science & Engineering
Cam Profile Designs for an Atkinson Engine	Mechanical Engineering	Science & Engineering
Optical Transmittance Characterization of Colloidal Silica Gels for Encapsulation of Oxygen Producing Cyanobacteria	Mechanical Engineering	Science & Engineering
Using Microfluidics to Reduce Climate Uncertainity for Atmospheric Aerosols	Mechanical Engineering	Science & Engineering
Optimizing Mesenchymal Stem Cell Cryopreservation	Mechanical Engineering	Science & Engineering
Understanding physiochemical changes in Jurkat cells at different layers during freezing using Raman spectroscopy	Mechanical Engineering	Science & Engineering
A Robotic Surgical Grasper for the Testing of Silicone Tissues	Mechanical Engineering	Science & Engineering
Raman Spectroscopy for Understanding Low Temperature Damage During Cell Freezing	Mechanical Engineering	Science & Engineering
Creating a Simpler, Cheaper, and more Versatile Vehicle Data Logger	Mechanical Engineering	Science & Engineering
Molecular Modeling via Density Functional Based Tight Binding Objective Molecular Dynamics	Mechanical Engineering	Science & Engineering
Design and Assembly of a Counter-Flow Reactive Volatilization Reactor	Mechanical Engineering	Science & Engineering
Cycle Optimization and Thermodynamic Analysis of Solar Driven Ceria Cycle with Methane Reduction	Mechanical Engineering	Science & Engineering
The Synthesis of APOBEC3G Reversible Covalent Inhibitors	Medicinal Chemistry	Science & Engineering
Synthesis of Bifunctional APOBEC3G Inhibitors	Medicinal Chemistry	Science & Engineering
Mechenistic Investigation of DHM as an AHR Modulator	Medicinal Chemistry	Science & Engineering
Effect of Non-Nicotine Constituents in the Withdrawal Symptoms of Electronic-Cigarettes	Medicine	Science & Engineering
Platform for Testing Reagents for Optical Clearing for Whole Skeletal Muscle Clearing	Neurology	Science & Engineering
Optical Clearing and Imaging of Whole Skeletal Muscle Tissue	Neurology	Science & Engineering
Optimization of a Novel cardiac Resuscitation Device	Neurology	Science & Engineering
The Effect of tDCS on Movement Preparation and Initiation in Parkinson's Disease	Neurology	Science & Engineering
Investigating the role of P/Q-type Voltage-gated Ca2+ Channel Deletion in Purkinje Cells on Low Frequency Oscillations in the Cerebellar Cortex	Neuroscience	Science & Engineering
3D Bioprinting of Smooth Muscle Cells to Bioengineer an Esophagus	Pediatrics	Science & Engineering

Proposal Title	Fac Dept Name	College
Bioengineering Lungs with Human iPS Cells	Pediatrics	Science & Engineering
Solubility Improvement of the Berberine Through Co-Crystal Engineering Strategy	Pharmaceutics	Science & Engineering
Establishing the Feasibility of a Sensor-Based Sock Management System	Physical Medicine & Rehabilitation	Science & Engineering
Measurement of Ankle-Foot Roll-Over Shapes for Sit to Stand Transitions	Physical Medicine & Rehabilitation	Science & Engineering
Particle Tracing of Ions Accelerated Out of the Ionosphere as a Model For the Solar Wind	Physics & Astronomy	Science & Engineering
Crystal Growth and Transport Measurements of the Superconductor HgBa2CaCu2O6+x	Physics & Astronomy	Science & Engineering
Development of a New Cryogenic Microwave Filter	Physics & Astronomy	Science & Engineering
Crystal Growth Optimization and Thermal Properties of the Cuprate Superconductor HgBa2CaCu206+	Physics & Astronomy	Science & Engineering
Investigating Cosmic Ray Neutron Generation	Physics & Astronomy	Science & Engineering
Development of High Strain Magnetoelastic Materials	Physics & Astronomy	Science & Engineering
Filtering Out False Data in Photo-Multiplier Tubes	Physics & Astronomy	Science & Engineering
Thermoelectric Power Study of the Cuprate Superconductor HgBa2Cu04+	Physics & Astronomy	Science & Engineering
Continuation of Crystal Growth and Charge Transport Measurements of the Electron-Doped Superconductor Sm2xCexCuO4	Physics & Astronomy	Science & Engineering
Cryogenic Filtering for use in 2D Topological Insulators	Physics & Astronomy	Science & Engineering
Pairing of Domains for Cross Tie Walls In Magnetic Thin Films	Physics & Astronomy	Science & Engineering
An Examination of 1/f Noise in Gold Plated AFM Cantilever Tips	Physics & Astronomy	Science & Engineering
Analysis of the Homestake Mine Data	Physics & Astronomy	Science & Engineering
Monte Carlo Method Improvements	Physics & Astronomy	Science & Engineering
Crystal Growth and Thermal Properties of the Model Double-Layer Cuprate Superconductor HgBa2CaCu2O6+δ	Physics & Astronomy	Science & Engineering
Optical Properties of Hydrogenated Amorphous Silicon with Nanocrystalline Germanium via Constant Photocurrent Method	Physics & Astronomy	Science & Engineering
Measuring Transport Properties of the High-Temperature Superconductor HgBa2Cu04	Physics & Astronomy	Science & Engineering
Measuring Residual Charge in Animal Bone Following Irradiation with High Energy Photons	Physics & Astronomy	Science & Engineering
Crystal Growth and Charge Transport in Electron-Doped Sm2-xCexCu04	Physics & Astronomy	Science & Engineering
Improved Calculation of Rate of Elastic Transmission of a Helium Vapor Beam Through a Slab of Superfulid Helium	Physics & Astronomy	Science & Engineering
Motif Searching in Related Genes of Arabidopsis thaliana	Plant Biology	Science & Engineering
Characterization of Disease Resistance in Brachypodium Species against Crown Rust Fungi	Plant Pathology	Science & Engineering
Analysis of Oxygen Diffusion in an Islet Encapsulation Device Using Finite Element Modeling	Radiology	Science & Engineering
High-Field in vivo Visualization of the Human Globus Pallidus and Connectivity of the Basal Ganglia Using 7T MRI	Radiology	Science & Engineering
A Study to Investigate the Effect of Hypoxia on the Viability of Encapsulated Islets using Oxygen Consumption Rate Measurements	Radiology	Science & Engineering
Kickstarted Network Analysis	Sociology	Science & Engineering
Internal Migration and Post-Great Recession Recovery in Minnesota Counties and Neighborhoods	Sociology	Science & Engineering
Automated Method to Extract Information of Supplements from FDA Drug Labels	Surgery	Science & Engineering
Hot-melt Pressure-Sensitive Adhesives containing High Biomass Contents	Wood & Paper Science	Science & Engineering