

Session: 3:30 - 4:45pm, Session A

Name: Espy, Hannah

Department: Sociology

Presentation Title: Narratives of Meritocracy: Mapping Schemas of Success using Belief Network Analysis

Abstract:

When Americans think about mobility and who “gets ahead in life,” empirical studies demonstrate that a variety of beliefs are often invoked, such as hard work, education, discrimination, and luck. What is far less clear, however, is whether these beliefs are patterned. Are there distinct types of schemas that individuals employ when framing the problem of getting ahead? For example, sociologists often imply that attributing success to personal agency (e.g., hard work and skill) is to some degree the opposite of attributing outcomes to structural forces such as discrimination and luck. Whether or not these forces are actually inversely coupled in the minds of individuals is an unanswered question. Thus, the purpose of this study is to examine a large sample of Americans and their responses to a battery of questions concerning the nature of success. In contrast to traditional statistical approaches that focus on explaining level of agreement (e.g., to what extent do individuals agree that luck is important?), I employ Belief Network Analysis, a new approach proposed by Boutyline and Vaisey (forthcoming) that helps reveal whether beliefs are connected to one another (e.g. is luck believed to be the opposite of hard work?). I find that the schemas about success are both less structured than suggested by the current research on meritocracy, and vary in form and level of constraint. In particular, differences in the schemas of respondents who identify as democrat versus republican suggest that the former do not adhere to a single schema whereas the beliefs of the latter are far more structured.

Session: 3:30 - 4:45pm, Session A

Name: Houdek, Matthew

Department: Communication Studies

Presentation Title: Remembering the Black Holocaust: Articulating the "Maafa" from the Spaces of Social Death

Abstract:

This short paper attends to the emergent practices within black vernacular communities to re-articulate the Black Holocaust as the "Maafa" (MA-AFA), a Kiswahili word meaning "great disaster" or "terrible occurrence." It illuminates the relations between public memory, white supremacy, and social death, while arguing that although the conditions of social death are (rightly) met with scholarly cynicism with regard to black agency, that important identity and memory work can still be marshaled from this contested space. I argue for how articulations of the Maafa are a means of putting "multidirectional memory" into practice, and which serve both a counter-hegemonic and a constitutive function. This essay contributes to racial rhetorical scholarship by demonstrating how black vernacular commemorative practices centered on the Maafa open a horizon from which new subject positions and discourses of reconciliation may manifest. Rhetorically renaming the Black Holocaust allows black vernacular communities to take ownership over these historical traumas and challenge the nation's forgetfulness through commemorative practices.

Session: 3:30 - 4:45pm, Session A

Name: Redmond, David

Department: Philosophy

Presentation Title: Wolterstorff on Secular and Theistic Attempts to Ground Human Rights

Abstract:

Nicholas Wolterstorff argues that the most plausible secular accounts of the grounding of human rights fail because, absent some relation to God, there is no feature that all and only humans have and which gives us a worth sufficient to account for the rights we recognize as human rights. Wolterstorff argues that a theistic grounding of human rights, however, is possible. He develops an account of the grounding of human rights according to which human rights are grounded in our being loved by God. I criticize Wolterstorff's theistic account and suggest a better one.

Session: 3:30 - 4:45pm, Session A

Name: Shrivastava, Sunaina

Department: Business (Marketing)

Presentation Title: Impact of Embodied Metaphors on Attitude Strength

Abstract:

Attitude strength as a concept has gained momentum in recent research -- substantial research (Fazio 1995) has found that strong attitudes come to mind faster, persist over time, and, very importantly, guide behavior. Traditionally, it has been held that strong attitudes are a result of the conscious cognitive process of elaboration, where an individual engages in effortful issue relevant thinking, or, even perceived elaboration. However recently, Kwon & Nayakankuppam (2015) found that attitude strength can result from non-elaborative processes as well with certain kinds of people, namely entity theorists, forming strong attitudes very easily and quickly without high levels of elaboration. We extend this line of research by showing that incidental bodily experiences which activate metaphors based on 'information' or 'data' characteristics/quality (e.g. 'hard vs soft' data; 'converging vs diverging' data; 'one-sided vs two-sided' data) unconsciously affect attitude strength and lead one to have strong attitudes towards a target object. Essentially, such embodied metaphors related to 'information' quality induce individuals to unconsciously perceive the same information describing the attitude object as having stronger versus weaker evaluative implications. Such a biased perception about the evaluative implications of the information increases or decreases the likelihood of one self-rehearsing the attitude towards the target object, consequently strengthening or weakening one's attitude. The current research proposes and validates that attitude strength can be achieved via an unconscious embodied metaphor activation route as well, and, not necessarily via conscious cognitive elaboration.

Session: 3:30 - 4:45pm, Session B

Name: Andrade, Luiza

Department: Civil and Environmental Engineering

Presentation Title: Electron Doping Goethite with Fe(II): Influence on Goethite Properties and Reactivity

Abstract:

As the fourth most abundant mineral in Earth's crust, and with concentration in soil varying from 0.2 to >10% in mass, iron plays an important role in soil and groundwater chemistry. Recently, a new pathway for Fe redox cycling has emerged, which includes Fe(II)-Fe(III) oxide electron transfer and catalyzed recrystallization, where reduced iron species react with iron minerals, donating an electron that may participate on reactions with environmental pollutants. Despite growing evidence of Fe(II)-Fe(III) oxide electron transfer, there is some discrepancy in computational chemical calculations regarding whether electron transfer is energetically feasible. In addition, the fate of the electron doped into goethite the oxide is unclear. While we have done some work that suggests Fe(II) electron doping is observable in hematite and ferrihydrite there is limited direct experimental data available to assess the fate of an electron doped into goethite from Fe(II). Here we measured electron transfer of goethite by Fe(II) using isotope specific ^{57}Fe Mössbauer spectroscopy. We measured the oxidation of sorbed Fe(II) as function of pH, Fe(II) concentration, and presence of anions. Our findings show that the oxidation of sorbed Fe(II) occurs over a pH range of 5 to 8, as well as over a Fe(II) concentration range of 0.1 to 8 mM. In addition, we also found that Fe(II) was oxidized in the presence of several anions, including chloride, perchlorate, and sulfate. We speculate that the observed electron transfer may be due to defects on the goethite particles that is not captured in the computational models of goethite. We are further exploring how the concentration of defects influence on electron transfer, and if those features are essential for electron transfer to occur.

Session: 3:30 - 4:45pm, Session B

Name: Pan, Yang

Department: Marketing

Presentation Title: Uncovering Goal Structure from Consumer Purchase Histories

Abstract:

Consumer behavior in a retail setting is goal-directed behavior. Knowing this, retailers create multiple category product assortments, allowing consumers to create bundles of products to satisfy some particular needs. Typically, these bundles are assembled over different shopping occasions due to storage, budget and shopping time constraints. For this reason, consumer shopping goals may not be evident on a given shopping visit. However, over time, consumers assemble a bundle of products to meet specific long-run consumption goals. In this research, we develop a model in which consumers evolve across goal states that drive purchase behavior. At each time point, buying behavior reflects a tradeoff between current category inventory and the increased utility of purchasing a goal-appropriate assortment of categories. We construct a dynamic Multivariate Logistic (MVL) Model, which helps to identify categories that contribute to each goal and to show the sequential assembly of these categories. Our model helps to identify the current goal state(s) of a particular consumer and to predict the set of product categories that are likely to be necessary to finalize the goal(s). In this way, the model both informs management about the consumer decision process and generates product recommendations.

Session: 3:30 - 4:45pm, Session B

Name: Rios, John

Department: Management Sciences

Presentation Title: A Network Analysis Approach to Predict Firms' Performance

Abstract:

Firms are always in the pursuit of improving their performance, and it has been shown that supply chain characteristics of a firm have an impact on its overall performance. This research attempts to identify if supply chain network and competition network structures could help to predict the performance of a firm. The analysis starts with building a supply chain network with more than 7k nodes and 50k edges, along with a second network –the competition network– which is showing the competition relationships among the companies included in the first network. Metadata of companies, along with topological metrics that reflect important supply chain concepts such as diversity or coordination, are retrieved for a set of firms. Predictive models are trained to analyze Firms' Performance, and their results show that features based on firms' supply chain network and competition network structures can help to improve the prediction of their performance.

Session: 3:30 - 4:45pm, Session B

Name: Shetty, Bhupesh

Department: Management Sciences

Presentation Title: Identifying root cause of error using event logs

Abstract:

In this study we investigate ways to identify causes of assignable error in a manufacturing plant. We consider resources and machines in a plant, and aim to find the pattern/patterns of machines and resources that are causing higher defect rates in the manufactured products. We use an association-based method to solve the problem. Even though this study is motivated by a problem in a manufacturing plant, our research is relevant in analyzing click-stream data, understanding the effectiveness of medications in health-care etc.

Session: 3:30 - 4:45pm, Session C

Name: Abdi-Oskouei, Maryam

Department: Environmental Engineering

Presentation Title: Understanding the Impact of Natural Gas Extraction Activities on Air Quality in the Northern Front Range Metropolitan Area (NFRMA)

Abstract:

Natural gas (NG), with lower carbon dioxide emission in comparison to coal, has been promoted as a bridge fuel that can smooth the transition from fossil fuels to zero carbon energy sources. Methane and Volatile Organic Compounds (VOCs) are the main component of NG and can escape into the atmosphere during the extraction of NG. These pollutants are precursors of tropospheric ozone (O₃) and can impact regional air quality. The Northern Front Range Metropolitan Area (NFRMA) with the population of 4.8 million experience higher than the standard O₃ on a regular basis. A better understanding of the emission and transport of O₃ precursors is essential for controlling the O₃. The various sources of air pollutants in the NFRMA such as oil and NG extraction facilities, agricultural activities, urban pollution, and power plants and complex terrain and transport are the major complications in understanding high air pollutants concentration in this region.

We use Weather Research and Forecasting model with chemistry (WRF-Chem) and the National Emission Inventory (NEI-2011) to simulate the transport and production of primary and secondary air pollutants in the NFRMA. Simulated values are compared against ground-based and airborne measurements during the FRAPPÉ flight campaign. These comparisons are used to evaluate the performance of WRF-Chem simulation in capturing the complex meteorology in this area and to assessing the accuracy of emission estimates in the NEI-2011.

Session: 3:30 - 4:45pm, Session C

Name: Durgut, Suleyman

Department: Physics and Astronomy

Presentation Title: Single and Double Muon Trigger Efficiencies for CMS experiment at 13 TeV at CMS

Abstract:

Compact Muon Solenoid (CMS) is one of the sub-experiments taking place at Large Hadron Collider (LHC). LHC, a proton-proton collider, has started taking data in 2010 at 7 TeV center of mass energy. The center of mass energy of the collisions was first increased to 8 TeV in 2012. Then, in 2015, the energy was increased to 13 TeV. In 2015 and 2016, CMS detector recorded the collision data at 13 TeV, which may result in new discoveries. To understand the detector performance during LHC runs, CMS researchers measure the efficiency of particles for each center of mass energy. In this study, we show the latest results of CMS trigger efficiencies for muons. The trigger efficiencies are based on the single and double muon triggers used in the data taking processes.

Session: 3:30 - 4:45pm, Session C

Name: Nada, Majid

Department: Chemistry

Presentation Title: Greener Synthesis Methods of Nanocrystalline ZSM-5

Abstract:

Nanocrystalline ZSM-5 zeolite, which is a type of porous aluminosilicate material can be used in a variety of applications in industry, environment, and medicine. Nanocrystalline ZSM-5 can be prepared using different synthetic approaches. Almost all of these methods require a template, such that the nanocrystalline ZSM-5 materials are formed around the template and then the template is removed to introduce the porosity. The removal process can be done by heating the materials for a long time to decompose the template, but during this process carbon dioxide gas, which is considered harmful to the environment, is also formed. Consequently, using the template to form these nanocrystalline materials is considered time, energy, and money inefficient. Therefore, finding another way to synthesize these nanocrystalline materials without using the template would be beneficial. Here, nanocrystalline ZSM-5 materials were successfully formed by a new method without using the template. In this method, the yield and the quality of the materials are very high. In addition, the conditions that are used such as the time, the temperature, and the chemical materials used are changed in a way that helps to study the effect of these conditions on the formation of the desired materials. The obtained materials were characterized by using different instruments that help to identify the type and the properties of the materials.

Session: 3:30 - 4:45pm, Session C

Name: RAY, KAMAL

Department: CHEMISTRY

Presentation Title: Force spectroscopy and morphology study of sea spray aerosol (SSA) particles' by using atomic force microscopy (AFM)

Abstract:

Study of the aerosol particles' size, morphology, phase and composition are important to understand the effect of the aerosol particles on climate. In presence of water, aerosol particles change morphology, height to diameter ratio i.e. aspect ratio (AR), and mechanical properties. However, AR and mechanical properties variation of different aerosol particles in controlled humidity morphology have not been reported yet for submicrometer sized (500 nm to 1000 nm) aerosol particles'. In the current study, at 20% relative humidity (RH) morphology, AR and mechanical measurement have studied for substrate deposited sea spray aerosol (SSA) particles by using atomic force microscopy (AFM) to make a way to distinguish among atmospheric particle types. For this study, eight atmospheric relevant SSA inorganic (NaCl and MgSO₄) and organic (lipopolysaccharides, glucose, azelaic acid, glutaric acid, palmitic acid, and malonic acid) systems have chosen as model compounds that contributes a lot to generate SSA particles. Also, six inorganic-organic binary chemical systems (NaCl- malonic acid, NaCl- glucose, magnesium sulphate-glucose) have studied into 1:3 and 3:1 molar ratios to understand much more complex systems. AFM 3D images and force spectroscopy have utilized to establish a correlation of morphology, AR and mechanical of SSA particles of single and binary model compounds.

Session: 3:30 - 4:45pm, Session D

Name: Adams, Alissa

Department: Art History

Presentation Title: The Republican Refashioning of Artistic Tradition in Horace Vernet's *The Apotheosis of Napoleon*

Abstract:

Shortly after learning of the death of Napoleon Bonaparte, French artist and Napoleonic enthusiast Horace Vernet began *The Apotheosis of Napoleon* (1821). The painting portrays two groups of mourners—the family of General Bertrand and a ghostly host of fallen soldiers—on a cliff, gathered around Napoleon's grave. Although the painting borrows from many established tropes of apotheosis imagery—especially the combination of the physical and celestial realms in one image—it deviates from its precedents in an important way. Many apotheosis paintings glorify the memory of the deceased by portraying his or her physical form in a state of spiritual transcendence. In a marked deviation from this tradition, Vernet's painting does not depict Napoleon at all. Instead, it focuses on the memories of the mourners who have gathered around his grave. Vernet's decision to emphasize the mourners rather than depicting Napoleon reflects an important shift in how certain parts of French society conceptualized power during an era of deep political division. This paper will explore this shift by examining Vernet's painting in conjunction with contemporary examples of traditional apotheosis imagery, the coexistence of nineteenth-century populist movements, and reception theory. In particular, it will examine how Vernet manipulates iconography of his painting and the experience of his viewers to dismantle the relationship between the subject of apotheosis and hierarchical understandings of society. Ultimately, this study will demonstrate that Vernet's manipulation of the collaboration between his painting and its viewers reflects contemporary attempts to transform Napoleon from an autocratic "great man" into a democratic "man of the people" in service of his goal of promoting republican ideals.

Session: 3:30 - 4:45pm, Session D

Name: DILEK, ISMAIL

Department: PSQF Quantitive Foundtations

Presentation Title: Turkish Revolution and its effects to Turkish Education System : 'From a theotratric empire to modern republic'

Abstract:

Ottoman Empire had been in the saddle of lands in three continents for eight centuries. Educational system of Ottoman Empire depended on behaviorist, teacher cent red, parrot fashioned system. After World war-I, Turkish nation has decided to change its destiny alongside its revolutionist leader: Mustafa Kemal. While he was the head chief of an army which fights in three different front lines, he was also participating in the first congress of teachers of the new country that he was going to establish. With its eastern background, and secularist revolution to have western life standards, Turkey is a different example to follow. Since 1923, its social life and educational life has been affected by many events. This oral presentation aims to present a different perspective to how systems could change, how people could change by social life styles from yesterday to today.

Session: 3:30 - 4:45pm, Session D

Name: Kananovich, Volha

Department: School of Journalism and Mass Communication

Presentation Title: Specifying the Role of the Media in Taxation- Democratization Link: Evidence from Cross-National Data

Abstract:

Taxpaying constitutes a major opportunity for citizens to relate to their governments. Although it is true that paying taxes is a responsibility, it also entitles citizens to claim control over government spending, which may facilitate a greater democratization of a country's political regime. Consistent with this reasoning, a growing body of scholarship has documented a positive relationship between the size of tax revenues extracted by the state and the adherence of the country's regime to democratic values. What has been left underexplored is the role in this relationship of the media, a commonly available and relied-upon source of information about taxpaying for the public.

This study contributes to filling this gap, by exploring the relationship between the nature of the political regime and the rhetorical construction of the concept of a taxpayer in the national press. By drawing on a computer-assisted content analysis of articles published by 87 newspapers and news agencies from 51 countries, it demonstrates that the less democratic a state is, the more likely it is for the national press to downplay the role of taxpaying in entitling citizens to a place at the political table. This is achieved by framing taxpaying in tax enforcement terms and promoting the interpretation of a taxpayer as a subordinate in a hierarchical, top-down relationship with the state. The study furthers a more nuanced understanding of the taxation-democratization link and suggests new ways to communicate the benefits of democratic governance to citizens in authoritarian countries.

Session: 3:30 - 4:45pm, Session D

Name: Paul, Subin

Department: Journalism and Mass Communication

Presentation Title: Playing Different Strokes: A Study of Migrant Malayali Journalists in Qatar

Abstract:

This ongoing project examines how Malayalam-language print newspapers in Qatar create ethnic and linguistic identities tied to the South Indian state of Kerala. Most news stories in these newspapers are about Kerala, whose inhabitants—called Malayalis—are among the largest and the most mobile immigrant groups in Qatar. I posit that newspapers are an important site for Malayali migrants to negotiate their social position as Indians working temporarily in Qatar. Based on in-depth interviews with migrant journalists in Qatar, this study demonstrates that journalists see themselves as ambassadors of Malayali culture in the foreign land. Furthermore, since most Malayalam-language newspapers in Qatar are owned by various Muslim organizations or trusts back in Kerala, the journalists' reportage reflect that religious position, even though they aspire to go beyond their public image as "community journalists."

Session: 3:30 - 4:45pm, Session E

Name: Ancelmo, Thiago

Department: College of Liberal Arts& Sciences - Music

Presentation Title: Penderecki's Neo-Romantism in Prelude for clarinet

Abstract:

PENDERECKI'S NEO-ROMANTISM IN PRELUDE FOR CLARINET

The Polish composer Krzysztof Penderecki is one of the most influential and admired composer of the 20th century. Since his appearance in the classical music scene in 1959, his name became a synonymous of avant-garde, placing him in a select group of composers including Pierre Boulez, Karlheinz Stockhausen, and others, who changed the way people understood and perceived classical music of the twenty century. His piece "Threnody to the Victims of Hiroshima" (1960) was a critical point in the music of the twentieth century, showing a new way to notate music and to use extended technique, the piece was used in the soundtrack of Kubrick's motion picture "The Shining".

Penderecki has two distinct periods in his compositional style, music before 1975 and music after 1975. His music after 1975 belongs to a movement named as "New Simplicity", which his music is particularly associated to one of the different branches known as "Neo Romantic". Penderecki wrote five pieces originally for clarinet, plus three arrangements in a period of 46 years, however between the first and the second piece there is a gap of almost 30 years, his interest in the clarinet grow up after he changed his compositional style.

The purpose and intention of this paper is to investigate Penderecki's compositional style, paying special attention to the work for the clarinet. The discussion will be focus on Prelude (1987) for clarinet solo, and it will compare it with others pieces by the composer from the same period.

Session: 3:30 - 4:45pm, Session E

Name: Miller, Graham

Department: Education Policy and Leadership Studies

Presentation Title: Keeping up with the Joneses: The effects of peer comparison on organizational change

Abstract:

This study explores how social comparison and benchmarking affect organizational behaviors and American colleges and universities. As post-secondary institutions are able to access data about one another and benchmark their performance against peers, they are susceptible to behavioral changes within their reference group. Using peer group data from the Integrated Postsecondary Education Data System (IPEDS), this study analyzed organizational changes at private, not-for-profit, four-year colleges and universities. Results indicate that competitive and aspirational comparison through institutions' reference groups was associated with Carnegie Classification change.

Session: 3:30 - 4:45pm, Session E

Name: Runnalls, Cristina

Department: Teaching and Learning

Presentation Title: “Well, They Understand the Concept of Area”: Pre-service Teachers’ Responses to Student Area Misconceptions

Abstract:

The purpose of this study was to explore the ways in which elementary pre-service teachers responded to student misconceptions about geometry topics, within the context of their existing mathematics content knowledge. We carried out written assessments and semi-structured interviews with 24 pre-service teachers enrolled in a geometry and measurement course. Initial findings included a misattribution of area understanding to students, frequent use of visual representations, and key differences in response types depending on initial content knowledge. However, in several cases pre-service teachers were able to leverage their own understanding towards productive instructional responses. Recommendations for supporting pre-service teachers navigate the intersection between content and pedagogical knowledge are discussed.

Session: 3:30 - 4:45pm, Session E

Name: Skretta, James

Department: Music

Presentation Title: "It's like I was there...": On Being the Foreigner in John Adams's *The Dharma at Big Sur*

Abstract:

How does a piece of music convey meaning? The title might tell you something about a composition's content, and sometimes a composer will provide you with program notes. Such is the case with John Adams's *The Dharma at Big Sur*. However, it is false to assume that the mere knowledge of a composer's intentions will lead a listener to construe a specific narrative. Indeed, it is often the case that we have no insight into a composition's overt narrative elements, and we still derive meaningful experience from those works.

In this essay, I would like to explore how a meaningful musical depiction of an "enlightened one along the California coast" might be communicated to and understood by a listening audience. Kofi Agawu believes that "The analyst must not be distracted by questions of intentionality, as when skeptics wonder whether the composer was conscious of relationships unearthed by the analyst." So rather than attempting to connect the musical content to a firm metaphor for Adams and his memories, I would instead like to show how listening to the composition might allow me to imagine that I, myself, am the enlightened one who comes to find a new west-coast home.

Session: 3:30 - 4:45pm, Session F

Name: chede, laxmi shanthi

Department: College of pharmacy, pharmaceuticals

Presentation Title: Enhancing Midazolam Permeability across the Buccal Mucosa for Rapid Seizure Treatment

Abstract:

Enhancing Midazolam Permeability Across the Buccal Mucosa for Rapid Seizure Treatment

Early treatment, often administered outside of a hospital, is needed to halt uncontrolled seizures in order to prevent further neurological injury or permanent brain damage. Recent clinical studies have reported that buccal delivery of midazolam could be an effective and convenient method to deliver adequate quantities of midazolam in a short time period in order to control seizures. To retain the drug at the site of administration for further absorption, thin film delivery systems were prepared and midazolam release and permeability was investigated in-vitro using tissues obtained from pigs. The aim of this investigation was to study the buccal delivery of midazolam-containing formulations including cosolvents, permeation enhancers or presented as buccal films to assess the potential for the development of a fast-onset buccal delivery system of midazolam. Midazolam permeability in different formulations (cosolvent solutions containing permeation enhancers, mucoadhesive films, Buccolam[®] - like formulation) was measured through pig buccal mucosa using NavicyteTM diffusion cells. Brightfield microscopy was used to assess the effects of different midazolam formulations on buccal tissue morphology. A comparative in-vitro permeation study comparing the best performing cosolvent formulation containing permeation enhancer and a mucoadhesive film containing permeation enhancers resulted in higher permeabilities for both formulations when compared to a solution formulation with similar composition to Buccolam[®]. Buccal films provide a promising method for enhanced and extended midazolam permeability across the buccal mucosa and may provide an effective means to treat seizures in an outpatient setting.

Session: 3:30 - 4:45pm, Session F

Name: Fuller, Tyson

Department: Biology - Genetics

Presentation Title: High-Throughput, Behavioral Analysis to Investigate Seizure Sensitivity in Zebrafish

Abstract:

Chronic epileptic seizures affect approximately one percent of the general population. High throughput sequencing is identifying a significant number of potential causative genes, yet their role in disease remain unknown. The zebrafish is a valuable model of epilepsy due to its high similarity to humans and its seizure-like behavior in response to pharmacological and genetic manipulations. We previously demonstrated that knockdown of genes associated with human epilepsy sensitizes zebrafish to seizure-inducing drugs. My project utilizes the zebrafish to characterize the functional role of genes identified in the NIH Undiagnosed Diseases Program for which mutations have been associated with epilepsy. I isolated the zebrafish orthologues and characterized the expression patterns for fifteen genes. To facilitate high-throughput in vivo screens, I adapted a larval motility assay and developed a code to analyze the data sets. I successfully characterized the candidate genes in the context of seizure sensitization. I found six genes, upon knockdown, result in seizure sensitization in the zebrafish. I show expression of each of these genes in specific regions in the brain during neural development. Further, I find axon outgrowth defects in a subset expressed in the retina. Reagents to test for rescue and localization are in progress.

Session: 3:30 - 4:45pm, Session F

Name: Jayasinghe, Ashini

Department: Chemistry

Presentation Title: Discovering Water Uptake Rates and Selective Properties of a Uranium Metal-Organic Nanotube

Abstract:

Developing novel materials that can efficiently remove water vapor is vital as elevated humidity can cause some adverse effect to certain systems and one of the potential candidates for this is metal-organic frameworks as it has high storage capabilities. One of the disadvantages currently existing metal-organic frameworks have is they lack selectivity to water. U(VI) based metal-organic nanotube (MON) was synthesized and single-crystal X-ray diffraction indicated that water molecules are arranged in an ice-array within interior channel. Additional investigations indicated that the MON was selective to water and underwent reversible dehydration at 40 °C. In the current study, the rate of gaseous uptake was measured using a range of relative humidity conditions. A gas adsorption apparatus was developed where and water vapor was passed at a constant flow rate into a chamber contained dehydrated MONs and the rates of uptake were determined by determining the mass of water added at specific time intervals. Selectivity of the MON to other vapors was explored by exposing dehydrated crystals to vapors of different solvents with varying sizes, shapes and polarities separately. Solvent uptake was monitored by thermogravimetric analyses (TGA) and the identity of the absorbed species was determined by Fourier Transformation Infrared (FTIR) Spectroscopy of the evolved gas. Our results indicate that the water uptake rate depends on the humidity of the environment. The MON also does not show uptake of any other solvent vapor, confirming that it is selective to water both in the liquid and gaseous phases.

Session: 3:30 - 4:45pm, Session F

Name: Payne, Mo

Department: Chemistry

Presentation Title: Remarkable water confinement properties of a metal-organic nanotube

Abstract:

A metal-organic nanotube (MON) has been synthesized with the uranyl unit (UO_2^{2+}) and iminodiacetic acid. The tube contains channels of diameter 1.2 nm that are occupied by hexameric water molecules that arrange themselves into a chair fashion. Initially it was assumed that this arrangement of water molecules mimicked that of hexameric ice (Ih). However, under further scrutiny it appears these solvent molecules take the shape of ice II. This rare high pressure polymorph of ice is thought to only exist naturally in the cores of the moons of Jupiter.

Furthermore, upon variable temperature crystallographic interrogation we observe subtle changes in the unit cell dimensions of the MON that suggest possible phase changes of the confined ice around 250 K.