

# District VIII Missouri Junior Academy of Science – March 10<sup>th</sup>, 2017

<b>Highly Superior</b>	
<b>Drew Ellefsen</b>	Exploring the Potential Application of Polymeric Aerogels for Application in Reducing Acoustic Signature Created by an Airfoil
<b>Kenneth Khor</b>	The Use of Arsenic-doped Zinc oxide as a Replacement for Titanium Dioxide in Dye-sensitized Solar Cells
<b>Leland Whitman</b>	The Use of Graphene and Modified Cellulose in a Compost Filter Sock to Reduce PAH Pollution Caused by Urban Runoff
<b>Lindsey Miller</b>	Determining the Efficiency of the Potential Use of American Beautyberry ( <i>Callicarpa americana</i> ) as a Yellow Fever ( <i>Aedes aegypti</i> ) Repellent
<b>Michael Redlund</b>	The Use of an Engineered Variformed Pinning System for Tornado Resistant Residential Construction
<b>Olivia Kline</b>	Establishment of a Permanent Cell Line of the Native Pollinator <i>Bombus impatiens</i> : Applications in Entomology, Agricultural Science, and Nosema Research
<b>Vincent Khor</b>	The Extraocular Effects of Blue-Enriched LEDs on Human Reaction Time

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<b>Superior</b>	
<b>Brenden Barbour</b>	Analysis of Heart Rate Variability to Detect Type I and II Diabetic Onset Using Wearable Technology with Photoplethysmographic Capability
<b>Cooper Short</b>	Creating a Water Resistant Circuit Board Utilizing a Silica-Based Superhydrophobic Coating to Prevent Short Circuits
<b>Drew Van Hook</b>	Development of a Superhydrophobic Coating for Anti-Icing Purposes on Overhead Power Lines
<b>Grace Hall</b>	A Comparison of the Enzymatic Carbon and Nitrogen Utilization Capacity of <i>Lespedeza cuneata</i> and <i>Lespedeza virginica</i>
<b>Johnathan Crickard</b>	Exploring the Potential for Platinum with Transition Metals: The Development of a Cobalt and Cerium-based Ceramic Monolith Coating for Increased Catalytic Converter Efficiency
<b>Kallie Davis</b>	Coupled Physiological Effects of Iron (II) Sulfate Heptahydrate and the Polycyclic Aromatic Hydrocarbon Phenanthrene upon <i>Microcystis aeruginosa</i>
<b>Kelli Alford</b>	Photo- and Chemotactic Response of <i>Orconectes virilis</i> : Determining the Efficacy of a Positive and Negative Taxic System for Nuisance Crayfish
<b>Lee Kitchen</b>	Biomass Derived Fuels: A Novel Approach of Catalytically-enhanced Production of Bio-crude Derived from Industrial Sawdust Waste through the Use of the Zeolite ZSM-5 Catalyst
<b>Mercedez Hanlon</b>	Exploring the Potential Use of Plant-extracted Essential Oils for the Bio-control of the Oak Wilt Fungus <i>Ceratocystis fagacearum</i>
<b>Pierce Taylor</b>	The Effects of Varying LED Arrays on the Efficiency of a Light Field Network
<b>Tara Poole</b>	Transgenerational Effects of E-Liquid and Nicotine on <i>Caenorhabditis elegans</i> Fecundity
<b>Trey Young</b>	Implementing Nitrogen Doped Graphene into Tin-silver-copper solder to Improve its Thermal and Electrical Properties
<b>Zane Foulk</b>	The Application of the Triboelectric Effect in Different Motors to Determine the Most Efficient Method of Harvesting Static Electricity

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<b>Excellent</b>	
<b>Autumn Reeves</b>	Ovulatory Signaling Using Visual Cues: An Analysis of Female Gait During Ovulation and Perception by Males
<b>Bryce Leuenberger</b>	The Use of Graphite in Electrical Transmission
<b>Destin Sutterer</b>	Electricity from Air Pressure: A Study of the Piezoelectric Properties of Tetrahedral Barium Titanate in a Pressurized Environment
<b>Paxton Poole</b>	A Mobile Approach to Trach the Safety of Your Child Via Geofencing Through the Application Big Mother
<b>River Wise</b>	Biological Inventory of Invertebrate Fauna of Bridal Cave