

HOSTED BY THE USNA RESEARCH OFFICE

Midshipman Research Poster Session



**U.S. Naval Academy
Dahlgren Hall
13 Dec 2016**

- 0830-0900 Open poster viewing
Mids are free to view other posters and talk to classmates about research.
Guests can view posters.
- 0900-1030 All mids must stand by their posters and discuss their research with faculty
and guests.

These midshipmen are enrolled in independent research courses (XX495 or the equivalent, or Trident) or honors courses, and have been working with USNA faculty on projects in many areas, including those of interest to the Navy. This unique learning experience allows midshipmen to apply their classroom knowledge to new areas and important problems as well as develop their critical thinking skills. Today, we celebrate their accomplishments and contributions.

POSTER #	MIDN Presenter(s)	Major	Poster Title	Adviser(s)
1	Sonya Ye, Margaret McLaughlin	Chemistry	Development of 3-Component Surrogate Mixtures for Catalytic Hydrothermal Conversion Diesel and Jet Fuels	D. Luning Prak
2	Jessica Lois	Chemistry	Synthetic Equivalents for Dicyanoacetylene - Towards a Simplified Synthesis of Tetraazaporphyrins	J. Fitzgerald
3	Alana Brady, Lauren Webb	Chemistry	Synthesizing and Modifying NU-1000 for the Neutralization of Nerve Agents	C. Whitaker
4	Lauren Stiff	Chemistry	Catalytic Activity and Thermal Stability of Chymotrypsin Encapsulated in Self-assembled Lithocholic Acid Nanotubes	R. Siefert
5	Brett Flaherty	Chemistry	Characterizing the Nanomechanical Properties of Beta-Amyloid Aggregation on Various Lipid Surfaces by Atomic Force Microscopy	E. Yates
6	Aiden Lang	Chemistry	Identification and Analysis of Hydrolysable Tannins in Leaf Extracts	D. Dillner
7	Robert Marshburn, Paige Stateler	Chemistry	Investigating the Roles of Mycobacterium smegmatis L,D-Transpeptidases in Cell Wall Biosynthesis	L. Basta
8	Amy Krick	Chemistry	Effects of Tannins from Red Oak Leaves on the Growth, Mortality, and Development of Gypsy Moths	B. Rehill
9	Jules Murphy	Chemistry	Screening of Anti-Corrosive Coatings on Additive Materials	R. Calhoun
10	Trevor Graham	Chemistry	Historical Pigments	J. Lomax
11	Brandon Pippin, Dani Given	Chemistry	Analysis of Heavy Metal Solutions by XRF	M. Schroeder
12	Nick Wilcox	Chemistry	Examination of Atmospheric Aqueous Phase Production of Formic and Acetic Acids	D. O'Sullivan
13	Michelle Doan	Chemistry	Electrochemical Studies of Cysteine/Zinc Interactions	G. Cheek
14	Jacob Woolman	Chemistry	Microwave Heating and the Wittig Reaction	D. Dillner
15	M. Gustafson	Chemistry	MD Study of the Effect of Alkyl Aromatic Content on Thermophysical Properties of Surrogate Catalytic Hydrothermal Conversion Fuels	J. Harrison
16	Ryan Le	Chemistry	Molecular Dynamics: Simulations of Plasma-Induced Decomposition of High Explosives	M. Elert
17	Jules Murphy	Chemistry	Study of CeO based Anti-Corrosion Coatings by Scanning Electrochemical Microscopy (SECM)	R. Calhoun
18	Rob Young, Danielle Turner	Chemistry	Developing an Isolation Strategy for New Antibiotics	C. Sweet
19	Jess Laney	Chemistry	Using In Vitro Selection to Find a 2',3'-Cyclic IMP Probe	D. Morse
20	Katherine Ryall	Chemistry	Modification of Bamboo Yarn through Natural Fiber Welding	P. Trulove
21	Mary Scully	Chemistry	Application of Natural Fiber Welding for the Generation of Novel Horse Hair Composites	P. Trulove
22	Nicole Hadler, Eryn Stockdale, Kenny Wise	Chemistry	Analysis of Viral Protein and RNA Interactions in HIV-1	I. O'Carroll
23	Emily Kilen ^T	Physics	Development of a Metal Ion-Dependent Switch Engineered into the Interior of a Protein	J. Schlessman
24	Sarah Phinney	Physics	Signal Source Separation	K. McIlhany

POSTER #	MIDN Presenter(s)	Major	Poster Title	Adviser(s)
25	Evan Jones	Physics	Modeling a Quantum Rigid Rotor Dipole in a DC Electric Field	R. Wilson
26	Susumu Jones	Physics	Complex Magnetic Interactions of Cobalt Vanadate, Co ₃ V ₂ O ₈	J. Helton
27	Christian Forbush	Physics	SU(2) and SU(3) and their Applications to Quantum Gravity	E. Ita
28	Leslie Ann Alasagas	Physics	Materials Science Applications via NEC 5SDH Pelletron	J. Vanhoy
29	Kenneth Hicks ^B	Physics	Beta-Decay Spectroscopy of the Odd-Odd 160Eu Nucleus	D. Hartley
30	Walter LaCroix	Physics	Electrodynamic Susceptibility Tensor in the Basis of Atomic Orbitals	D. Finkenstadt
31	Joseph Simpson ^{T, B}	Physics	Study of Doubly Charged Delta Baryons at RHIC	R. Witt
32	Daniel Savella	Physics	Characterization of 2D Materials Synthesized via Vapor Deposition	P. Brereton
33	Ryan Albers	Physics	Endurance Study of Cymbal Transducers Under Varying Drive Conditions	E. Tucholski
34	Christopher Panuski ^T	Electrical Engineering & Physics	Development of an Integrated Electro-Optomechanical RF-to-Optical Transducer	B. Jenkins, N. Frigo, C. Mungan, D. Mechtel
35	Mike Ross ^B	Electrical Engineering	Characterizing the Temporal Response of Fiber Bragg Grating Temperature Sensors to Directed Energy Attacks	C. Nelson, R. B. Jenkins, P. Joyce
36	Sierra Knoch	Electrical Engineering	Emergency Positioning System Accuracy with Visible and Infrared LEDs in High-Security Facilities	C. Nelson, O. Walker
37	Andrew Jevitt	Electrical Engineering	Electrical Characterization of Lightweight Nanocarbon Materials for High Energy Laser Positional Sensor (HELPS) Applications	D. Mechtel, B. Jenkins, C. Nelson, P. Joyce, H. EIBidweihy
38	Jude Ampolini	Electrical Engineering	Magneto Optical Kerr Effects	C. Nelson, H. EIBidweihy
39	William Bourque	Electrical Engineering	Evidence and Implications of Differences in Optical Turbulence on Opposite Coastal Environments	C. Nelson
40	Stephen Phillips	Electrical Engineering	Controllers For Power System Applications	D. Opila
41	Jacob Melton ^B	Computer Engineering	Power Analysis of Solid State Drive Security Features	R. Rakvic, H. Ngo, O. Walker
42	Jacob Melton ^B	Computer Engineering	AES Encryption on GPUs vs CPUs	R. Rakvic
43	Brett Gentile ^B	Computer Science	Output-Sensitive Algorithms for Text Search with Wildcards	D. Roche
44	Joe Fitzgerald	Cyber Operations	An Auction Model for Distributed Opportunistic Sensing	C. Griffin
45	Ryan Mui ^B	Cyber Operations	Modeling Layered Security Systems against Cyber Attacks	R. Greenlaw, A. Slack
46	John Davin ^T	Information Technology	Cybersecurity Impact of "Shoulder Surfing" Attacks on Password Authentication on Mobile Devices	A. Aviv
47	Charlotte Asdal, Ben Felhofer, Chris Fennell, Alejandro Perez, Luke Sullivan	Various majors (EAPS)	Ukraine's Energy Security: A Profile	P. Caton, H. Ernst, J. Smith, K. Swope

POSTER #	MIDN Presenter(s)	Major	Poster Title	Adviser(s)
48	Juni Kim, Bryan Laboy, Nicholas A. Paraiso, Matt Rees, Terry Renfro-Pihut	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Israel	P. Caton, H. Ernst, J. Smith, K. Swope
49	Yen-ting Lin, David Dedios, Andrea McDavid, Nourse Fox, Shay Martin	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Iran	P. Caton, H. Ernst, J. Smith, K. Swope
50	Ben Bailin, Kyle Casmeay, Brian Greggs, Michael McKinney, Mick Rivera	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Russia	P. Caton, H. Ernst, J. Smith, K. Swope
51	Elizabeth Fenelon, Zach Michel, Kyle Schaff, Catherine McCarthy, Laura Nadolski	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Canada	P. Caton, H. Ernst, J. Smith, K. Swope
52	Campbell Burke, Sarah Chama, Jacques Delicat, Kevin McGinty, Andrej Richards	Various majors (EAPS)	Energy Analysis, Policy, and Security: France	P. Caton, H. Ernst, J. Smith, K. Swope
53	Scotty Davids, Olivia Morrell, Ryan Harman, Jordan Davis, Dylon Grayson	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: People's Republic of China	P. Caton, H. Ernst, J. Smith, K. Swope
54	Jim McGrath, Mac Oldfield, Miguel Nava, Chase Stewart, Ben Allen	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: South Africa	P. Caton, H. Ernst, J. Smith, K. Swope
55	Dan Crawley, Sarah Claudy, Brett Kraft, Sierra Borra, Carson Hart	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Germany	P. Caton, H. Ernst, J. Smith, K. Swope
56	Trey Fullilove, Ashley Lois, Calvin Davies, Kendrick Mouton, Michael Strack	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Brazil	P. Caton, H. Ernst, J. Smith, K. Swope
57	Kelsey Ashbrook, Colton Byers, Steven Swiatek, Kyle Robb, Jacob Rowell	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Japan	P. Caton, H. Ernst, J. Smith, K. Swope
58	Katherine Lazzeri, Kelsey Hastings, Preston Gorman, Dylan Pennell, Harrison Samario	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: India	P. Caton, H. Ernst, J. Smith, K. Swope
59	Myles Davenport, Lucy Ford, Anthony Kloszewski, Matt Lembo, Brian Pajarillo, Christy Tse	Various majors (EAPS)	Energy Analysis, Policy, and Security Focus: Pakistan	P. Caton, H. Ernst, J. Smith, K. Swope
60	Christian Lavachek	English	Northern Courage: The Appealing Heroism of Medieval Leaders	J. Fitzgerald
61	Jonson Henry	English	The Influence of Music: Scops and Skalds in Medieval Literature	J. Fitzgerald
62	Jonson Henry	English	Power Vacuum: The Sibling Archetype in Children's Literature	A. Drew
63	Madeline Manhertz	English	The Mark of Cain and the Designation of the Subaltern	J. Fitzgerald
64	Jessica Miller	English	Cain's Kin & Comitatus: Combat Stress and Social Taboos in Anglo-Saxon Literature	J. Fitzgerald
65	Amber Mendez	English	The Power of Women's Speech in Old English Literature	J. Fitzgerald

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66	Anna Crutchfield	English	The Impact of Culture on Political Succession	J. Fitzgerald
67	Sarah Claudy	English	The Dragon Inside: Beowulf's Confrontation with the Id	J. Fitzgerald
68	Gabrielle de Leon	English	The Curse of the Rose: Peaceweaving Complications in Beowulf	J. Fitzgerald
69	Katherine Kinnear	English	Writing Through Trauma: Cristina Garcia's Dreaming in Cuban	N. Garcia-Crespo
70	Alison Keenan	English	Always the Monster but Not the Villain: an in Depth Analysis of Grendel's Mother	J. Fitzgerald
71	Patrick Danylchuk	English	The Unifying Function of Humor in Anglo-Saxon Literature	J. Fitzgerald
72	Sarah Spain	English	From Hero to Monster: Lost in Translation	J. Fitzgerald
73	Heidi Zisselman	English (H)	Structure as Meaning: An Analysis of the Envelope Pattern in Beowulf	J. Fitzgerald
74	Seth Adams	English (H)	Remolding Text: Man's Agency in Anglo-Saxon Literature	J. Fitzgerald
75	Sara Tumbas	English (H)	Into the Fens: Anglo-Saxon Identity Formation and the Transcendence of Fragmentation	J. Fitzgerald
76	Kathryn Quandt	Applied Mathematics	Social Network Analysis and its Application to Terrorist Networks	M. Testerman
77	Megan Hartman ^B	Mathematics	Rational Map with Tetrahedral Symmetries	A. Ksir
78	Cara Rathmell	Mathematics	Classification of Meningitis Status	E. McGuffey
79	Trevor Karn	Mathematics (H)	Partially Ordered Sets of Flags	M. Wakefield
80	James Talisse ^T	Mathematics (H)	Centralizer Group of Symbolic Dynamical Systems	K. Medynets
81	Stephen Ward ^B	Operations Research	Staff Scheduling in the Face of Disruptions	J. Foraker, N. Uhan
82	Lily Brose ^B	Quantitative Economics	Optimization, Combinatorics, and Algebraic Geometry: Gröbner bases and Perfect Matching	S. Margulies
83	Wilson Rydalch ^B	Mechanical Engineering	Stress Concentration Investigation	P. Joyce, B. Jenkins
84	Michael Walker	Mechanical Engineering	Homogeneous Charge Compression Ignition of JP5 and N-alkane Fuels in a Single Cylinder Diesel Engine	J. Cowart
85	Robert Kelso ^B	Mechanical Engineering	A Study on Partially Pre-mixed Combustion Response of JP5 Fuel in a Single Cylinder Diesel Engine	J. Cowart
86	Tahler Bandarra ^T	Mechanical Engineering	Finite Element Modeling and Artificial Bone Testing of Spinal Screw Trajectories	J. Schubbe, S. Malek, E. Retzlaff
87	Ben Bailin ^T	Mechanical Engineering	The Effects of Unsteady Flow Conditions on the Performance of a Cross Flow Hydrokinetic Turbine	E. Lust, K. Flack
88	David Bishop	Mechanical Engineering	Use of Plastics Additive Manufacturing to Investigate the Influence of Geometry on Energy Absorption of Armor	S. Graham
89	Samuel Ciocco	Mechanical Engineering	Structural Analysis of Spherical Cap Gridshells	S. Malek

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90	Michael Pentaleri	Mechanical Engineering	Optimization of the FSAE Carbon Fiber Composite Monocoque using Classical Laminate Theory Modeling and Mechanical Testing	P. Joyce
91	Nicholas Payne	Mechanical Engineering	Thermal Behavior of a Water Droplet exposed to HEL Radiation	C. Brownell
92	Sydney Sisler	Nuclear Engineering	Application of the Hazard Prediction and Assessment Capability (HPAC) and the HotSpot Health Physics Toolkit to National Planning Scenario 1 (10-kiloton Improvised Nuclear Device)	S. McHale
93	Robert Rosenthal	Nuclear Engineering	Neutron Transport Modeling of USNA Subcritical Reactor Using SCALE 6.2	S. Blair
94	Berl McLaurin ^B	Nuclear Engineering	Comparison of Weapon Yield Estimates using Phi Fifth Method and Full Non-Linear Radius-Time Curve Fits	J. Burkhardt
95	Samuele Polsinelli ^B	Nuclear Engineering	Design of a Supercritical Carbon Dioxide Power conversion Test Loop for the Naval Academy	J. Leidig, S. Blair
96	M. Patrick Serbent	Nuclear Engineering	Fracture Characterization of Additively Manufactured Ti-6Al-4V	S. Graham, E. Retzlaff
97	Nick Hart ^B	Nuclear Engineering	Material Characterization of Additively Manufactured Components for Process Optimization	B. Baker
98	Drew Brenn ^B	Nuclear Engineering	Measurement and Modeling of Neutron Protection Factors With Polyenergetic Neutron Sources	M. Millett
99	Carl McKay	Nuclear Engineering	Analysis of the Short Range Capture Gamma Spectral Fingerprint of Special Nuclear Material in the Undersea Environment	M. Millett, M. Schell
100	Christian White	Naval Architecture	Characterization of the Neutron Ship Effect in a Marine Environment	M. Millett, P.H. Miller, C. Leidig
101	Evan Stargel	Ocean Engineering	Joining Steel and Composites with Perforated Hybrid Joints	S. Mouring, S. Malek
102	Samantha Pankow	Ocean Engineering	Oscillating Water Column Power Production	S. Mouring, T. Prophet
103	Alex Crans	Ocean Engineering	Wave Dissipation Properties of Long-Line Kelp Systems	D. Fredriksson
104	Jacob Rose	Oceanography	Intraseasonal Variability of the Ocean: Impacts of the Madden-Julian Oscillation	B. Barrett
105	Molly Hanson	Oceanography	Evolution of the Upper Level Outflow during Hurricane Joaquin (2015) in the Navy Global Environmental Model (NAVEM) Analyses	E. Sanabia
106	Elizabeth Field	Oceanography (H)	Time Tendency of Eddy Kinetic Energy during Hurricane Joaquin (2015) in the Navy Global Environmental Model (NAVEM) Analyses	E. Sanabia
107	Julia Arthur	Oceanography (H)	Atmospheric Drivers Associated with Rapid Ablation Events in the Chesapeake Basin, 1960-2009	G. Henderson
108	Teresa Anderson	Systems Engineering	3-D Microrobot and Fluid Characterization	S. Firebaugh, H. Elbidweihy, J. Piepmeier
109	Ethan Doherty ^T	Systems Engineering	Path Planning for Reduced Identifiability of Unmanned Surface Vehicles Conducting Intelligence, Surveillance, and Reconnaissance	K. Kiriakidis, M. Hurni
110	Gabe Collins, Charles Stabler	Systems Engineering	Laser Propagation and Scattering in a Fog	S. Avramov-Zamurovic
111	Gabe Collins, Charles Stabler	Systems Engineering	Detecting Laser Beams Underwater	S. Avramov-Zamurovic

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112	Julie Candau ^B	Systems Engineering	A Feasibility Study of Hand Posture via Electromyography	L. Devries, M. Kutzer
113	Grant Young	Systems Engineering (H)	Improved Scan Rate of a Scanning Thermal Microscope Using an Isothermal Probe	E. Zivi, A. Smith, R. Warzoha
114	Pierce Parlier	Systems Engineering (H)	Mobile Location Extrapolation Unit	R. O'Brien
115	Jacob Hastings	Systems Engineering (H)	Station Keeping for a Hovering Fixed Wing UAV	G. Piper
116	Chase Sax	Systems Engineering (H)	Automation of Active Aerodynamic Elements for FSAE	L. Devries
117	Bobby Stroup	Systems Engineering (H)	Feedback Controller Design for an Autonomous Robotic Manipulator with Applications to Quadcopter Capture, Recharge, and Re-Launch	M. Kutzer
118	Thomas Wilson ^T	Systems Engineering (H)	Modeling the Effects of Meteorological Conditions on the Neutron Flux	S. Avramov-Zamurovic, M. Millett, J. Leidig, M. Nelson, K. Barron, D. VanDerwerken
119	Tommy Peacher	Systems Engineering (H)	Dynamic Positioning of a Marine Platform Using RISE Control	M. Feemster
120	Alex Hunley	Systems Engineering (H)	Design, Development, & Analysis of MAV Airfoil	J. Dawkins, L. DeVries
121	Noah Wachlin ^B	Systems Engineering (H)	Monocular Camera-based Navigation for MAVs	J. Dawkins
122	Brandon Maas	Systems Engineering (H)	Mobile Location Extrapolation Unit	R. O'Brien
123	Chase Sax	Systems Engineering (H)	Automation of Active Aerodynamic Elements for FSAE	L. DeVries
124	Shannon Johnson	Systems Engineering (H)	Real-time Pose Estimation Using Monocular Visual Feedback with Applications to Manipulator-based Retrieve, Recharge, and Redeploy of Small UAVs	M. Kutzer
125	Joseph Gentile	Systems Engineering (H)	Bug Vision Optic Flow for Obstacle Avoidance and Navigation	G. Piper
126	Ben Keegan ^B	Systems Engineering (H)	Nonlinear Attitude Control Methods for a Manipulator Equipped Small Satellite	R. O'Brien, G. Piper
127	Edward Hanlon ^B	Systems Engineering & Aerospace Engineering	3D Camera for On-orbit Rendezvous and Docking Operations	G. Piper
128	Charles Webb	Aerospace Engineering	Operationalization of a Small-Scale Rotor Test Stand	S. Davids, J. Milluzzo
129	Brian Cully ^{T,B}	Aerospace Engineering	PIV Flowfield Measurements of Hovering Rotors with Leading-Edge Protuberances	J. Milluzzo, S. Drayton, D. Miklosovic, M. Murray
130	Michael Morales	Aerospace Engineering	Use of Additive Manufacturing to Develop Advanced Hybrid Rocket Designs	K. Castonguay
131	K. Parriott	Aerospace Engineering	Regression Rates of Solid Propellants	K. Castonguay
132	Eryn Culton	Aerospace Engineering	Unrestricted Satellite Motion Simulator: Concept Validation	J. King
133	Late Posters			

T = Trident Scholar
B = Bowman Scholar

Note: Many of these projects are on-going and will be continued in the spring semester. A few posters will not have midshipman presenters (due to conflicts with exams).

More information about midshipman research can be found at:
<http://www.usna.edu/AcResearch/MidResearch/>

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