Decarbonization Research Consortium

WELCOME

12 January 2024

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Decarbonization Research Consortium Meeting
12 January 2024 / 1 – 3 pm ET / 10 am – Noon PT
Agenda

1:00 – 1:15	Welcome/Introductions (Spector/Fletcher) Prep for February In-Person Mtg
1:15 – 1:30	Update on Seawater to Fuel (Desario) Update on Consortium Collaboration (Muras)
1:30 – 2:10	Lightning Round: Updates from Research Projects Wisconsin Illinois NSWC-Philadelphia
2:10 – 2:50	Guest Presentation: Josh Messner, Department of Energy
2:50 – 3:00	Admin / Consortium Next Steps (Spector/Fletcher) Dates for Apr - May Meetings Conclusion

Decarbonization Research Consortium Meeting
14 February 2024 / 8 – 5 MT + Virtual Via Zoom

Powerhouse Energy Campus
430 N College Ave
Fort Collins CO 80524

COLORADO STATE UNIVERSITY

Air Travel: Denver Airport (DEN)
It is about a 1 hr & 15 min drive if you take the toll way (E470 ~$5-$10 in tolls). (Depends on traffic.)

On-site Parking

RSVP by 24 January – note in-person or virtual

OPERATIONAL ENDURANCE FROM ENVIRONMENTAL CARBON

This program seeks technology development to support sustainable carbon neutral operational energy processes and materials for Navy and USMC needs. The portfolio is balanced among basic and applied research along with advanced technology development to support operational endurance and sustainability.

Research Concentration Areas

- Scalable carbon capture technologies
- Next-generation carbon conversion technologies (basic, applied research, demonstration and scale-up)
- Modeling and simulation of reaction pathways
- Environmental and mission impact simulation
- Exploitation of energy and material production from environmental carbon in naval environments

PROGRAM CONTACT INFORMATION

Name Willauer, Heather D.
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How to Submit

For detailed application and submission information for this research topic, please refer to our broad agency announcement (BAA) No. N00014-24-S-B001.

Contracts: All white papers and full proposals for contracts must be submitted through FedConnect; instructions are included in the BAA.

Grants: All white papers for grants must be submitted through FedConnect, and full proposals for grants must be submitted through grants.gov; instructions are included in the BAA.

ALTERNATIVE FUELS FOR ENERGY RESILIENCE AND OPERATIONAL ENDURANCE

PROGRAM CONTACT INFORMATION

Name DeSario, Paul Anthony Dr.
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Department Code 331
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The Alternative Fuels for Energy Resilience and Operational Endurance program comprises basic and applied research investments to support Naval interest in easing fuels logistics, increasing operational endurance and meeting climate goals. This program seeks technological breakthroughs to enable the generation of non-carbon and hydrocarbon fuels from abundant and logistically compatible resources. The investments also support the development of technologies that enable the efficient utilization of alternative fuels in existing combustion devices, fuel cells, and hybrid power-generation systems and seeks to develop an understanding of the impact of alternative fuels on the design and performance of Naval power and propulsion systems.

Research Concentration Areas

- On-demand production of energy-dense fuels from abundant resources, including hydrogen (H2) from seawater electrolysis and hydrocarbons from environmental carbon capture and conversion

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Research Concentration Areas

- On-demand production of energy-dense fuels from abundant resources
  - Hydrogen (H_2) from seawater electrolysis
  - Hydrocarbon fuels from environmental carbon capture and conversion
  - Development and validation of scalable thermochemical, electrochemical, and photochemical reaction pathways for generating H_2 and liquid hydrocarbon fuels
  - Design of catalysts, catalyst/support architectures, multifunctional electrodes, and membranes that ease kinetics bottlenecks in fuels synthesis/conversion chemistry
- Technologies enabling the storage, conversion, and utilization of non-traditional fuels/blends
  - Scalable reforming and cracking approaches
  - Fuel-flexible and impurity-tolerant fuel cells
  - Combustion science for high efficiency, fuel-flexibility and low emissions
- Systems modeling and design of thermally and electrically integrated power systems incorporating alternative fuels, hybrid power generation and/or emissions abatement technologies
  - Modeling to evaluate the performance of Naval power and propulsion systems that operate on alternative fuels
  - Modeling and simulation of reaction pathways, technology scaling, use-case scenarios, and analysis of environmental impacts and mission impacts

PROGRAM CONTACT INFORMATION

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Department Code 331
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Progress Update

Research Area Identification

1) Discussions with internal Navy communities
   - Aircraft: Follow-up discussion still pending
   - Navy TWH meeting – 1 Dec meeting
   - Continue to have additional discussions around fuels (Paul D. – ONR)

Collaboration

1) DOD Hydrogen Interagency Taskforce (HIT) – supporting Supply & Demand working group
2) DOT/MARAD – deeper-dive discussion scheduled 18 Jan
3) DOE – deeper dive with Josh Messner In February
4) NREL – initial discussions; working to align further discussions

Comments/Suggestions/Recommendations?

Decarbonization Research Consortium

Path Forward

14 Feb 2024	**In-Person Meeting: 8-5 MT; CSU** Researcher Presentations
15 March 2024	**Online Meeting: 11 am – 1 pm ET** External Partner Presentations
April/May 2024	**Virtual Meetings: Dates/Times TBD**

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