



Novel Energetics Research Center (NERC)

OVERVIEW

To maintain lethal overmatch, the next generation of weapons requires energetic materials with orders of magnitude enhancement in performance. The Novel Energetics Research Center (NERC) will lead research focused on developing such disruptive energetic and propulsive materials to provide continued lethal overmatch across the full range of weapons for both direct and indirect fires.

Investigators are seeking to understand high-energy density energy storage and release on desired timescales, methods to balance various parameters in energetic formulations, and prediction of formulation compatibility.

PARTICIPANTS

Open to national and defense labs, universities and industry

CONCEPT OF OPERATION

The NERC will establish an overarching Cooperative Research and Development Agreement (CRADA) that will define the extent of collaboration conducted under the center and defines the disposition of intellectual property and the sharing of research outcomes and laboratory resources.

COLLABORATIVE FOCUS

- Multiscale modeling of energetic molecules
- Energetic molecule synthesis
- Energetic formulation
- Characterization of energetic performance from micro to large scale
- Next generation weapons development

BENEFITS

- Access to ARL's expertise in modeling of energetics modeling, synthesis, formulation, and characterization.
- Development of environmentally friendly energetic molecules, synthesis methods and formulations.
- Energetic molecules that meet insensitive munition (IM) requirements.
- Development of next generation weapons to utilize new energetic formulations.
- Established transition path of next generation energetics and weapons through scale-up, demonstration/validation, and military applications.

UNIQUE FACILITIES

- Energetics synthesis and formulation laboratories, including resonance acoustic mixing technology
- Energetics analysis laboratory, including GC, FTIR, HPLC, DSC and TGA
- Energetics ignition laboratory and laser shock ignition
- Precision measurement tools and diagnostic instrumentation capable of capturing and analyzing ballistic events at high spatial/temporal resolution
- High-pressure synthesis and scale-up of disruptive and propulsive materials
- Access to specialized facilities across the Army, the Navy, academia and industry

POINT OF CONTACT

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