BILLING CODE: 5001-03

DEPARTMENT OF DEFENSE

Department of the Army

Solicitation for a Cooperative Research and Development Agreement for the Transfer and use of a Unique Infrared Laser

AGENCY: Department of the Army, DoD.

ACTION: Notice of intent.

SUMMARY: The U.S. Army's Aviation and Missile Research, Development, and Engineering Center (AMRDEC) announces its intent to enter into a Cooperative Research and Development Agreement (CRADA) and seeks inquiries and proposals from potential partners. The goal of this CRADA will be the transfer of a one-of-a-kind infrared laser from AMRDEC to the partner's facilities and the cooperative demonstration of a new remote sensing methodology using this laser.

DATES: Preliminary inquiries and comments from potential partners must be received by August 1, 2017.

ADDRESSES: Submit inquiries and comments to U.S. Army RDECOM AMRDEC, ATTN: RDMR-CST (ORTA), 5400 Fowler Road, Redstone Arsenal, AL 35898 (*usarmy.redstone.rdecom-amrdec.mbx.orta@mail.mil*).

SUPPLEMENTARY INFORMATION: Under the proposed agreement, the Army's AMRDEC plans to collaborate with a single academic or industrial partner. Together, the AMRDEC and its CRADA partner will explore and demonstrate the new trace gas remote

sensing methodology based on infrared/terahertz double resonance spectroscopy, as described in the cited references below.

The double resonance technique requires a specially designed infrared laser that produces powerful (100 mJ) short pulses (100 ps) of wavelength tunable radiation (9-11 microns). A laser that uniquely matches those requirements was fabricated by STI Optronics, Inc. as part of a DARPA-funded Phase II SBIR contract and delivered to AMRDEC in 2014.

The CRADA partner must have the resources to package, ship, and install this laser in its facilities and operate it in partnership with AMRDEC to demonstrate the double resonance spectroscopic technique in either a simulated atmospheric chamber containing a trace gas and/or in an actual outdoor laser test range in which a trace gas may be safely released and detected.

Ideally, the partner will have a history of performing laboratory and/or outdoor spectroscopic sensing and will have the necessary infrastructure and expertise to operate this laser safely and reliably. As necessary, the partner should be prepared to elicit funding from other sources to support this project and may anticipate active support from AMRDEC in the preparation of such proposals.

AMRDEC, with its CRADA partner, will create a structured and collaborative environment to advance concepts and technologies for this experimental proof of concept demonstration. The desired products of the proposed collaboration are a successful demonstration of the double resonance technique using this laser and quantitative validation of the performance predicted in the cited references. When the CRADA ends, the partner will retain ownership of the laser, which may be used for other applications during and after the CRADA period.

The AMRDEC's contributions under the proposed CRADA will include:

(1) Scientific expertise in foundational molecular spectroscopy and the double resonance technique developed by its researchers and collaborators;

(2) Access to AMRDEC's laboratories and facilities where molecular spectroscopic research is performed;

(3) Cooperation with the partner as they package, ship, and install the laser at the partner's facility; and

(4) Cooperation in the preparation of proposals and mentoring of researchers new to aspects of the proposed project.

The non-Federal party's contributions under the proposed CRADA will include:

(1) Making arrangements and providing funding to package and ship the laser from AMRDEC facilities and install the laser at the partner's facility;

(2) Expert operation and maintenance of this unique laser in support of the proof-of-concept demonstration of this double resonance technique as well as other applications of the laser based on the partner's unique expertise;

(3) Joint publications and/or patents and/or demonstration hardware as well as sharing of the accumulated intellectual property through the terms specified in the CRADA; and

(4) Writing and submitting research proposals for funding of this project to external sponsors, with the full support of AMRDEC.

AMRDEC reserves the right to select for its CRADA partner one or none of the proposals in response to this notice. AMRDEC will provide no funding for reimbursement of proposal development costs. Proposals (or any other material) submitted in response to this

notice will not be returned. Proposals submitted are expected to be unclassified and have no more than 4 single-sided pages (excluding cover page and resumes). AMRDEC will select proposals at its sole discretion on the basis of:

(1) How well they communicate an understanding of, and ability to meet, the proposed CRADA's goal; and

(2) How well they address the following criteria:

(a) Technical capability to satisfy the non-Federal party’s described contributions;

(b) Resources available for satisfying the non-Federal party’s described contributions; and

(c) Technical expertise/understanding of infrared lasers, ultrafast laser spectroscopy, molecular spectroscopy, and remote sensing, as well as the necessary infrastructure to support a collaborative research project.

This is a technology transfer/development effort. AMRDEC has no plans to procure the technology. Proposals should clearly discuss how the concepts and technologies developed will be supported for the duration of the CRADA and outline plans to use the laser and the jointly developed capabilities after the CRADA ends.

Special consideration will be given to universities and small business firms/consortia, and preference will be given to partners located in the U.S.

The deadline for submitting proposals is August 15, 2017, and the selected partner will be announced by September 01, 2017.

REFERENCES:

(1) Elizabeth A. Tanner, Dane J. Phillips, Christopher M. Persons, Frank C. De Lucia, Henry O. Everitt, "Infrared/Terahertz Double Resonance Spectroscopy for Remote Chemical Sensing," Physical Review-Applied 2, 054016 (2014).

(2) D.J. Phillips, E.A. Tanner, F. C. De Lucia, and H. O. Everitt, "Infrared/Terahertz Double Resonance Spectroscopy of CH3F and CH3Cl at Atmospheric Pressure," Physical Review A 85, 052507 (2012). Also ArXiv 1202.0595.

(3) F.C. De Lucia, D.T. Petkie, and H.O. Everitt, "A Double Resonance Approach to Submillimeter/Terahertz Remote Sensing at Atmospheric Pressure", IEEE J. Quantum Electron. 45, 163 (2009).

Brenda S. Bowen
Army Federal Register Liaison Officer
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