Proposals Selected for Negotiation of Contracts

- **Alabama A&M RISE Foundation**
  
  4900 Meridian Street
  
  Normal, AL 35762

  **Morningbird Media Corporation**
  
  259 Cheswick Drive
  
  Madison, AL 35757
  
  Chance Glenn (585) 899-0457
  
  16-1-T12.04-9850 MSFC
  
  [An Additive Manufacturing Technique for the Production of Electronic Circuits](#) [1]

- **Arizona State University**
  
  PO Box 876004
  
  Tempe, AZ 85287

  **Busek Company, Inc.**
  
  11 Tech Circle
  
  Natick, MA 1760
  
  Judy Budny (508) 655-5565
  
  16-1-T4.02-9752 KSC
  
  [AstroCube: An Asteroid Prospecting CubeSat Mission](#) [2]

- **Carnegie Mellon University**
  
  5000 Forbes Avenue
  
  Pittsburgh, PA 15213

  **Protoinnovations, LLC**
  
  5453 Albemarle Avenue
Pittsburgh, PA 15217
Dimitrios Apostolopoulos (412) 916-8807
16-1-T11.01-9699 ARC

Increasing the Performance of Autonomous Planetary Robots Through Environmental Manipulations [3]

- **Carnegie Mellon University - Silicon Valley**
  NASA Research Park, Bldg 23
  Moffett Field, CA 94305

  **TRACLabs, Inc.**
  100 North East Loop 410, Suite 520
  San Antonio, TX 78216
  David Kortenkamp (281) 461-7886
  16-1-T11.01-9740 ARC

  Visualizing and Comparing Exploration Plan Alternatives and Change Effects (xPACE) [4]

- **Case Western Reserve University**
  School of Engineering
  Cleveland, OH 44106

  **Seacoast Science, Inc.**
  2151 Las Palmas Drive, Suite C
  Carlsbad, CA 92011
  Louis Haerle (760) 268-0083
  16-1-T6.01-9778 JSC

  Low Mass/Power Sensor Suite for Spacesuits [5]

- **Catholic University of America**
  Washington, DC 20064

  **Nanohmics, Inc.**
  6201 East Oltorf Street, Suite 400
  Austin, TX 78741
  Michael Mayo (512) 389-9990
16-1-T8.02-9741 GSFC

Photonic IC Spectrometer for Spacecraft [6]

- **Clemson University**
  300 Brackett Hall, Box 345702
  Clemson, SC 29634

Freight Farms, Inc.
840 Summer Street, Suite 108
Boston, MA 2127
Viktoria Shulevich (877) 687-4326
16-1-T6.04-9800 ARC

Self-Sustaining Crop Production Unit [7]

- **Colorado School of Mines**
  1012 14th Street
  Golden, CO 80401

Mango Materials
490 Lake Park Avenue
Oakland, CA 94610
Molly Morse (650) 427-0430
16-1-T6.04-9723 ARC

A Novel, Membrane-Based Bioreactor Design to Enable a Closed-Loop System on Earth and Beyond [8]

- **COSMIAC at The University of New Mexico**
  Albuquerque, NM 87131

Radiation Monitoring Devices, Inc.
44 Hunt Street
Watertown, MA 2472
Jennifer Carey (617) 668-6811
16-1-T6.02-9776 GSFC
• **Faboratory at Purdue University**

  585 Purdue Mall, ME 2147
  West Lafayette, IN 47907

  **Otherlab, Inc.**

  3101 20th Street
  San Francisco, CA 94110
  James McBride (415) 970-2209
  16-1-T11.01-9734 ARC

  [Soft Robotic Manipulators with Enhanced Perception using Multimodal Sensory Skins][10]

• **Georgia Institute of Technology**

  Atlanta, GA 30332

  **HJ Science & Technology, Inc.**

  820 Heinz Avenue
  Berkeley, CA 94710
  Hong Jiao (408) 464-3873
  16-1-T8.03-9761 ARC

  [Penetrator-Compatible Microfluidic Analyzer For Lipids, Amino Acid Chirality, and pH][11]

• **Massachusetts Institute of Technology**

  77 Massachusetts Avenue
  Cambridge, MA 2139

  **Aurora Flight Sciences Corporation**

  90 Broadway, 11th Floor
  Cambridge, MA 2142
  Scott Hart (617) 500-4892
  16-1-T4.03-9758 JPL

  [Spacecraft Swarm Coordination and Planning Tool][12]
- **Michigan Technological University**
  1400 Townsend Drive
  Houghton, MI 49931

  **Honeybee Robotics, Ltd.**
  Building 3, Suite 1005 63 Flushing Avenue Unit 150
  Brooklyn, NY 11205
  Kris Zacny (510) 207-4555
  16-1-T4.02-9747 KSC

  *Robotic ISRU Construction of Planetary Landing and Launch Pad* [13]

- **Mississippi State University**
  P.O. Box 6156
  Mississippi State, MS 39762

  **Tetra Research Corporation**
  420 Park Avenue West
  Princeton, IL 61356
  Rex Chamberlain (815) 872-0702
  16-1-T1.02-9703 SSC

  *Efficient High Fidelity Computational Tool for Acoustically Driven Multiphysics Propulsion Modeling* [14]

- **Mississippi State University**
  Mississippi State, MS 39762

  **CFD Research Corporation**
  701 McMillian Way Northwest, Suite D
  Huntsville, AL 35806
  Silvia Harvey (256) 726-4858
  16-1-T1.02-9828 MSFC

  *Unified In-Space Propulsion Framework for Prediction of Plume-Induced Spacecraft Environments* [15]

- **Mississippi State University**
  Mississippi State, MS 39762
CFD Research Corporation  
701 McMillian Way Northwest, Suite D  
Huntsville, AL 35806  
Silvia Harvey (256) 726-4858  
16-1-T1.02-9827 MSFC  
Prediction of Strutural Response and Fluid-Induced Vibration in Turbomachinery [16]

- North Carolina State University  
NCSU Office of Sponsored Programs  
Raleigh, NC 27695

Luna Innovations, Inc.  
301 1st Street Southwest, Suite 200  
Roanoke, VA 24016  
Shirley Evans (540) 961-6724  
16-1-T6.01-9730 JSC  
Environmentally Protective Fabrics for Spacesuits [17]

- North Carolina State University  
2701 Sullivan Drive  
Raleigh, MT 27695

Third Floor Materials  
3110 Edwards Mill Road Suite 300  
Raleigh, NC 27612  
Christopher Shelton (503) 740-7565  
16-1-T8.01-9717 LaRC  
Uncooled Multispectral Photoemissive Infrared Detector [18]

- Pennsylvania State University  
State College, PA 16803

Fibertek, Inc.
13605 Dulles Technology Drive
Herndon, VA 20171
Tracy Perinis (703) 471-7671
16-1-T9.01-9825 LaRC

Ultra-Compact Transmitter for Space-Based Lidar [19]

• Purdue University
155 S. Grant Street
West Lafayette, IN 47908

Physical Sciences, Inc.
20 New England Business Center
Andover, MA 1810
David Green (978) 738-8146
16-1-T1.01-9785 AFRC

Low-Cost, Scalable, Hybrid Launch Propulsion Technology [20]

• Purdue University
155 South Grant Street
West Lafayette, IN 47907

PC Krause and Associates, Inc.
3000 Kent Avenue, Suite C1-100
West Lafayette, IN 47906
Davida Parks (765) 464-8997
16-1-T15.01-9692 GRC

Hybrid Modeling Capability for Aircraft Electrical Propulsion Systems [21]

• SETI Institute Carl Sagan Center
Montain View, CA 94043

Honeybee Robotics, Ltd.
Building 3, Suite 1005 63 Flushing Avenue Unit 150
Brooklyn, NY 11205
Kris Zacny (510) 207-4555  
16-1-T8.03-9689 ARC  

**In-Situ Spectroscopic Europa Explorer (ISEE)** [22]

- **Southern Research Institute**  
  2000 Ninth Avenue South  
  Birmingham, AL 85205

**Gloyer-Taylor Laboratories, LLC**  
112 Mitchell Boulevard  
Tullahoma, TN 37388  
Paul Gloyer (931) 455-7333  
16-1-T12.01-9846 LaRC  

**Structural Nervous System** [23]

- **Stanford Mechnical Engineering**  
  Building 50, 416 Escondido Mall  
  Stanford, CA 94305

**Intelligent Fiber Optic Systems Corporation**  
2363 Calle Del Mundo  
Santa Clara, CA 95054  
Behzad Moslehi (408) 565-9004  
16-1-T4.02-9786 KSC  

**Robotic Tool for Asteroid Resource Prospecting and Characterization** [24]

- **Temple University**  
  1947 North 12th Street  
  Philadelphia, PA 19122

**SCCAQ Energy, LLC**  
432 Heritage Hills Drive  
Richland, WA 99352
Songgang Qiu (509) 308-2702  
16-1-T3.01-9698 GRC

**Advanced Stirling Regenerator and Heat Exchanger Assembly for Radioisotope Stirling Space Power** [25]

- **Temple University**  
  1947 North 12th Street  
  Philadelphia, PA 19122

**SCCAQ Energy, LLC**  
432 Heritage Hills Drive  
Richland, WA 99352  
Songgang Qiu (509) 308-2702  
16-1-T3.01-9697 GRC

**Innovative Stirling Convertor for Distributed Electric Power from Thermal Energy Recovery** [26]

- **Temple University**  
  1947 North 12th Street  
  Philadelphia, PA 19122

**SCCAQ Energy, LLC**  
432 Heritage Hills Drive  
Richland, WA 99352  
Songgang Qiu (509) 308-2702  
16-1-T3.01-9696 GRC

**400 W Stirling Convertor for kW-Class Space Power System** [27]

- **Texas Tech University**  
  911 Boston, Box 41023  
  Lubbock, TX 79409

**Paragon Space Development Corporation**  
3481 East Michigan Street  
Tucson, AZ 85714  
Carole Leon (520) 382-4814
16-1-T6.03-9824 JSC

**Development of the Integrated Water Recovery Assembly (IRA) for Recycling Habitation Wastewater Storage** [28]

- **The Board of Trustees of the University of Illinois**
  Champaign, IL 61820

  **Applied Material Systems Engineering, Inc. (AMSENG)**
  2309 Pennsberry Court
  Schaumburg, IL 60194
  Mukund Deshpande (630) 372-9650
  16-1-T3.02-9793 MSFC
  **Innovative High Energy Density Storage in Nano Vacuum Tubes (NVTs) Designed for Small Leakage Current** [29]

- **The Regents of the University of Minnesota**
  Minneapolis, MN 55455

  **ASTER Labs, Inc.**
  155 East Owasso Lane
  Shoreview, MN 55126
  Suneel Sheikh (651) 484-2084
  16-1-T4.03-9796 JPL
  **Satellite Swarm Localization and Control via Random Finite Set Statistics** [30]

- **The University of Alabama in Huntsville**
  301 Sparkman Drive
  Huntsville, AL 35899

  **NextGen Federal Systems, LLC**
  235 High Street, Suite 220
  Morgantown, WV 26505
  David Bissett (703) 568-7015
  16-1-T6.02-9753 GSFC
Space Radiation Intelligence System (SPRINTS) [31]

- **The University of Alabama in Huntsville PRC / OSP**
  301 Sparkman Drive, VBRH E-29
  Huntsville, AL 35899

  **Garvey Spacecraft Corporation**
  389 Haines Avenue
  Long Beach, CA 90814
  John Garvey (562) 498-2984
  16-1-T1.01-9835 MSFC
  Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine [32]

- **University of Alabama at Hunstville**
  301 Sparkman Drive
  Huntsville, AL 35899

  **Keystone Synergistic Enterprises, Inc.**
  664 Northwest Enterprise Drive, Suite 118
  Port Saint Lucie, FL 34953
  Bryant Walker (772) 343-7544
  16-1-T12.04-9804 MSFC
  Bi-Metallic Additive Manufacturing Close-Out of Coolant Channels for Large Liquid Rocket Engine (LRE) Nozzles [33]

- **University of California at Santa Barbara**
  Office of Research, Cheadle Hall 3227
  Santa Barbara, CA 93106

  **Angstrom Designs, Inc.**
  P.O. Box 2032
  Santa Barbara, CA 93120
  Timothy Halsey (805) 284-4535
  16-1-T13.01-9746 SSC
Modular Embedded Intelligent Sensor Network [34]

University of California, Los Angeles
11000 Kinross Avenue, Suite 200
Los Angeles, CA 90095

Tyvak Nano-Satellite System Inc
15265 Alton Parkway, Suite 200
Irvine, CA 92618
Austin Williams (480) 227-1113
16-1-T5.01-9716 GRC

Deployable Ka-Band Reflectarray [35]

University of California, Los Angeles,
Los Angeles, CA 90095

Linked Inc
3914 Deervale Drive
Sherman Oaks, CA 91403
Anne Lynch (805) 330-1650
16-1-T4.01-9721 AFRC

Sensitivity Analysis for Design Optimization Integrated Software Tools [36]

University of California, Santa Barbara
Electrical & Computer Engineering
Santa Barbara, CA 93106

Freedom Photonics, LLC
41 Aero Camino
Santa Barbara, CA 93117
Milan Mashanovitch (805) 967-4900
16-1-T8.02-9720 GSFC

Integrated Optical Transmitter for Space Based Applications [37]
• University of Central Florida  
  4000 Central Florida Boulevard  
  Orlando, FL 32816  

Aviana Molecular Technologies, LLC  
831 Amies Lane  
Bryn Mawr, PA 19010  
Vanaja Ragavan (610) 220-0965  
16-1-T12.01-9836 LaRC  

Passive Wireless Sensor System for Space and Structural Health Monitoring [38]

• University of Central Florida  
  4000 Central Florida Boulevard  
  Orlando, FL 32816  

Partow Technologies, LLC  
4304 Scorpius Street  
Orlando, FL 32816  
Payam Rabiei (407) 823-2417  
16-1-T8.02-9806 GRC  

Thin Film Lithium Niobate Microring Modulators for Analog Photonics [39]

• University of Dayton  
  300 College Park  
  Dayton, OH 45469  

Cornerstone Research Group, Inc.  
2750 Indian Ripple Road  
Dayton, OH 45440  
Chrysa Theodore (937) 320-1877  
16-1-T12.02-9788 KSC  

NONA Repair of Composite Structures [40]
Voxtel, Inc.
15985 Northwest Schendel Avenue, Suite 200
Beaverton, OR 97006
Debra Ozuna (971) 223-5646
16-1-T9.01-9710 LaRC

High-Gain, Low-Excess-Noise APD Arrays for Near-Single-Photon-Sensitive LADAR [41]

- University of Dayton, Research Institute
  300 College Park
  Dayton, OH 45469

Boulder Nonlinear Systems, Inc.
450 Courtney Way, Unit 107
Lafayette, CO 80026
Mark Tanner (303) 604-0077
16-1-T9.01-9816 LaRC

Non-Mechanical Beam Steering for Entry, Descent and Landing Sensors [42]

- University of Delaware
  210 Hullihen Hall
  Newark, DE 19716

STF Technologies, LLC
58 Darien Road
Newark, DE 19711
Richard Dombrowski (716) 799-5935
16-1-T6.01-9742 JSC

Shear Thickening Fluid Enhanced Textiles for Durable, Puncture- and Cut-Resistant Environmental Protection Garments [43]

- University of Florida
Gainesville, FL 32611

Emergent Space Technologies, Inc.
6411 Ivy Lane, Suite 303
Greenbelt, MD 20770
Everett Cary (301) 345-1535
16-1-T11.02-9713 GSFC

An Intelligent Autonomous Executive for cFS Distributed Spacecraft Missions [44]

- University of Maryland
  Department of Astronomy
  College Park, MD 20742

Nanohmics, Inc.
6201 East Oltorf Street, Suite 400
Austin, TX 78741
Michael Mayo (512) 389-9990
16-1-T8.01-9779 LaRC

A Cubesat Hyperspectral Imager [45]

- University of Puerto Rico - Mayaguez
  Call Box 9000
  Mayaguez, PR 681

TDA Research, Inc.
12345 West 52nd Avenue
Wheat Ridge, CO 80033
John Wright (303) 940-2300
16-1-T6.04-9773 ARC

Highly Efficient Closed-Loop CO2 Removal System for Deep-Space ECLSS [46]

- University of Tennessee
  Min H. Kao Building, Suite 304; 1520 Middle Drive
  Knoxville, TN 37996
Applied Research, LLC
9605 Medical Center Drive, Suite 113E
Rockville, MD 20850
Chiman Kwan (240) 505-2641
16-1-T8.01-9787 JPL
High Performance Image Processing Algorithms for Current and Future Mastcam Imagers [47]

University of Tennessee
University of Tennessee
Knoxville, TN 37996

Gloyer-Taylor Laboratories, LLC
112 Mitchell Boulevard
Tullahoma, TN 37388
Paul Gloyer (931) 455-7333
16-1-T3.01-9843 SSC
Active Radiation Shield [48]

University of Tennessee
1331 Circle Park Drive
Knoxville, TN 37916

TGV Rockets, Inc.
2519 Benning Road Northeast
Washington, DC 20002
Chuck Burch (571) 426-3290
16-1-T1.01-9784 MSFC
Low Cost Upper Stage for Affordable Nano/Micro Launch [49]

University of Texas Center for Electromechanics
Austin, TX 78758

Balcones Technologies, LLC
10532 Grand Oak Circle
Austin, TX 78750
Joseph Beno (512) 924-2241
16-1-T15.01-9808 GRC

**Mega-Watt Class High Voltage, Variable Frequency, Propulsor Power Unit** [50]

- **Vanderbilt University**
  PMB 407749, 2301 Vanderbilt Place
  Nashville, TN 37240

  **IOP Technologies, LLC**
  218 Ring Road, Suite A
  Louisville, KY 40207
  William Paxton (270) 331-1116
  16-1-T6.03-9725 JSC

  **Development of an Advanced Diamond TEC Cathode** [51]

- **Villanova University**
  Villanova, PA 19085

  **Materials Research and Design, Inc.**
  300 East Swedesford Road
  Wayne, PA 19087
  Brian Sullivan (610) 964-9000
  16-1-T12.01-9724 LaRC

  **Fiber Optic Health Monitoring of 3D Woven Preforms and Composites Employing Structurally Integrated Sensors** [52]

- **Virginia Tech**
  North End Center, Suite 4200, Virginia Tech
  Blacksburg, VA 24061

  **Enterprise Advisory Services, Inc.**
  6671 Southwest Freeway, Suite 800
Houston, TX 77074
Tony Johnson (440) 554-4036
16-1-T4.02-9726 KSC

Comprehensive Modeling for Off-Earth Mining Optimization and Resource Processing [53]

- **Virginia Tech**
  302 Whittemore
  Blacksburg, VA 24061

  **Nanosonic, Inc.**
  158 Wheatland Drive
  Pembroke, VA 24136
  Melissa Campbell (540) 626-6266
  16-1-T12.03-9821 LaRC

  Integrated Sensors for the Evaluation of Structural Integrity of Inflatable Habitats [54]

- **Virginia Tech**
  1333 Randolph Hall
  Blacksburg, VA 24061

  **Nanosonic, Inc.**
  158 Wheatland Drive
  Pembroke, VA 24136
  Melissa Campbell (540) 626-3645
  16-1-T12.02-9810 KSC

  Innovative Hybridsil Poly(Siloxane Imide) Composite Repair Materials and Methods [55]

- **Virginia Tech-Mechanical Engineering Department**
  635 Prices Fork Road-MC 0238
  Blacksburg, VA 24061

  **Nanosonic, Inc.**
  158 Wheatland Drive
  Pembroke, VA 24136
Melissa Campbell (540) 626-6266
16-1-T13.01-9820 SSC
Wireless Networked Sensors for Remote Monitoring in Propulsion Systems [56]

- Wake Forest University
  P.O. Box 7201
  Winston-Salem, NC 27109

  Streamline Automation, LLC
  3100 Fresh Way Southwest
  Huntsville, AL 35805
  Aijalon Putzier (256) 713-1220
  16-1-T6.03-9722 JSC
  Sustainable Water Purification [57]

- Wright State University
  3640 Colonel Glenn Highway
  Dayton, OH 45435

  Advratech, LLC
  714 East Monument Avenue
  Dayton, OH 45402
  David Burton (937) 241-9403
  16-1-T12.04-9743 MSFC
  Empirical Optimization of Additive Manufacturing [58]