The Engineering Research Digest will not be distributed over the holidays. Distribution will resume on January 9, 2019.

**Funding Opportunities**

http://tees.tamu.edu/researchsupport/funding/

---

**TEES Research Development – Proposal Development Assistance**

**Assistance for Junior Faculty**
If you are junior faculty and would like help in submitting a proposal, please contact Dr. Laurie Garton at lsgarton@tamu.edu at least 4 weeks before your proposal is due. For the most assistance, please contact her 2-3 months in advance.

Also, see Junior Faculty Opportunities below.

---

**LIMITED SUBMISSIONS**
If you would like to receive all notices of limited submission opportunities, please email shelley.martin@tamu.edu. Note that if you are on this list, you will receive any and all announcements, whether or not they apply to you. All limited submission opportunities are also posted on the VPR’s site.

**Limited Submission** *NSF Advanced Computing Systems & Services: Adapting to the Rapid Evolution of Science and Engineering Research* – Email of Intent Due January 4, 2019; Internal Proposal Due January 11, 2019

**Limited Submission** *W.M. Keck Foundation Keck Research Program* – Email of Intent Due January 11, 2019; Internal Proposal Due January 16, 2019

**Limited Submission** *Gordon and Betty Moore Foundation Moore Inventor Fellows* – Email of Intent Due January 11, 2019; Internal Proposal Due January 18, 2019

**Limited Submission** *NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)* – Email of Intent Due January 16, 2019; Internal Proposal Due January 23, 2019’
Limited Submission NIH Enhancing Science, Technology, Engineering, and Math Educational Diversity (ESTEEMED) Research Education Experiences (R25) – Email of Intent Due February 22, 2019; Internal Proposals Due February 25, 2019

Sea Grant Texas at Texas A&M University
New Texas Sea Grant Request for Proposals 2020-2022 (link) – Pre-proposal Due February 4, 2019; Full Proposal Due June 14, 2019 – Approximately $750,000 per year will be available to support 4-6 proposals, contingent on availability of funds from NOAA. Proposal budgets should be no greater than $150,000 in combined direct and indirect costs per year; 50% non-federal cost-sharing is required. For questions about proposal development, submission and review or the eSeaGrant system, please contact Mia Zwolinski, Texas Sea Grant Research Coordinator, at mzwolinski@tamu.edu or 979-458-0449; For questions about funding priorities, please contact Dr. Pamela Plotkin, Texas Sea Grant Director, at plotkin@tamu.edu or 979-845-3902.

DOC
New NMFS, NOAA, DOC 2019 Bycatch Reduction Engineering Program (link) – Full Due March 29, 2019 – This solicitation announces approximately $2,500,000 in federal funds that may be available in FY 2019 to provide support for 10-15 projects at approximately $50,000 to $200,000 per project.

R FY 2019 Community-based Restoration Program Coastal and Marine Habitat Restoration Grants (link) – Mandatory Pre-proposals Due January 14, 2019; Full Application Deadline Will Be No Earlier than April 15, 2019 (At least 45 days will be provided for completion of a full proposal.) – One-year or multi-year awards up to three funding years will be considered, and additional releases of funds may be used to fund selected proposals through FY21 without further competition. NOAA anticipates typical federal funding awards will range from $300,000 to $1.5 million over one to three years. NOAA will not accept proposals with a federal funding request of less than $75,000 or more than $3 million over three years.

DOD
New ONR Special Notice Task Force Ocean (link) – White Papers due no later than January 31, 2019; Full Proposal due dates will be tied to White Paper feedback notification dates – Periods of performance may be up to 3 years. Graduate student and post-doctoral researcher participation in Navy-funded undersea research under the TFO initiative is strongly encouraged. Funding for which will be under the authority of the ONR FY18 Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology, N00014-18-S-B001.

New Research Interests of the Air Force Office of Scientific Research BAA – Information and Networks (RTA2) – Dynamic Data Driven Applications Systems (DDDAS) Synopsis 2 (link) – Open until superseded – Approximately $300 million is anticipated to be available for support of actions awarded under this announcement, subject to availability of funds. Research proposals funded between $200,000 and $400,000 per year are encouraged. Most of our awards are three (3) years in duration. Awards may be proposed for not more than five (5) years.

New AFOSR Dynamically and Controllably Reconfigurable Antennas through Physical Deformation Processes (link) – Due January 18, 2019 – The grant award made under this
competition will be to an educational institution in the United States (US) as defined by 10 USC § 2194. AFOSR anticipates approximately $4.8 million in total funding will be available to fund one (1) award for five (5) years depending on availability of funds. AFOSR anticipates that each year will be funded at approximately $964,000. If any subawards are proposed, the prime university must receive at least 50% of total funding requested.

**MARS Broad Agency Announcement** ([link](#)) – Proposal Due Date for Initial Round of Selections for Technical Capability Areas: 1-4: December 10, 2018; BAA is continuously open through November 9, 2019, unless announced otherwise. – Awards in each Technical Capability are anticipated subject to the quality of proposals received and the availability of funds.

**FY19 Office of Naval Research (ONR) Navy and Marine Corps Science, Technology, Engineering & Mathematics (STEM), Education and Workforce Program** ([link](#)) – Mandatory White Papers Due April 1, 2019 - June 28, 2019; Invited Applications Due September 27, 2019 – ONR’s total STEM funding effort is $6,250,000 per year, subject to the availability of funds. Under this FOA competition, ONR intends to award approximately twenty-five (25) awards for a maximum of $250,000 per year for each award, with one-year (1) option periods for up to three (3) years.

**Naval Air Systems Command Digital Office (NDO) Office-wide Broad Agency Announcement (BAA)** ([link](#)) – White Papers may be submitted anytime until November 18, 2019, or until replaced by a successor BAA – Multiple awards are anticipated. The level of funding for individual awards made under this solicitation have not been predetermined and will depend on the quality of the white papers/proposals received and the availability of funds.

**Structural Integrity Research Collaborations for Aircraft (SIRCA)** ([link](#)) – White Paper Due October 23, 2023 – The Air Force anticipates multiple awards as a result of this solicitation, most likely as Cooperative Agreements. Awarded projects are anticipated to be 24 months in length, though different length projects may be proposed, with agreement values ranging from $50k-750k.

**ONR Special Program Announcement: Electronic Warfare Technology** ([link](#)) – White Papers Were Due December 7, 2018 (White Papers are not required but strongly encouraged); Full Due February 28, 2019 – ONR plans to allocate $25-30M dollars for efforts related to the Technical Areas in this Special Notice. The period of performance for projects will be one to three (1-3) years.

**ONR National Oceanographic Partnership Program (NOPP)** ([link](#)) – Topics 3-7 due January 18, 2019 – Up to $27.3 million over three (3) years may be available for this solicitation, subject to appropriation, availability of funds and final approval by the participating NOPP agencies.

**AFRL/RXC Structural Materials Open BAA** ([link](#)) – White Papers may be submitted any time until September 20, 2023; Proposal Due Date to be provided in the Requests for Proposals sent to offerors – The total estimated program value is $99,500,000, with multiple awards ranging from $100,000 to $5,000,000.

**DoD USAMRMC FY18-FY22 Broad Agency Announcement for Extramural Medical Research Synopsis 1** ([link](#)) – Continuously Open until September 30, 2022 – There are no specified funding limitations identified for a proposal/application submitted under this BAA. A budget should be commensurate with the nature and complexity of the proposed research.
Research Initiatives at the Naval Postgraduate School Synopsis 2 (link) – White Papers and Full Proposals may be submitted at any time until May 31, 2019 – The funded amount and period of performance of each proposal selected for award will vary depending on the research area and the technical approach to be pursued by the applicant selected.

DOE

New Energy-Water Desalination Hub (link) – Concept Papers Due February 7, 2019; Full Due May 7, 2019 – EERE expects to make a total of approximately $100,000,000 of Federal funding available for one new five year award under this FOA, subject to the availability of appropriated funds.

New SBIR/STTR FY 2019 Phase I Release 2 (link) – LOI Due January 7, 2019; Applications Due February 25, 2019 – Phase I grants resulting from this competition will be made during FY 2019 to small businesses with maximum award sizes of $200,000.

EERE Science, Technology and Policy Opportunity Appointments in Solar Energy Technologies Office (SETO)

The U.S. Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE) Science, Technology and Policy (STP) is seeking leaders in energy efficiency and renewable energy policy. The EERE STP appointments provide an opportunity for highly talented scientists and engineers to participate in policy-related projects at DOE’s Office of Energy Efficiency and Renewable Energy in Washington, DC.

SETO applications are reviewed (and offers are made) two times per year with rolling application deadlines of January 15th and June 15th. The application review process takes approximately 3-4 months.

Three levels of participation, Level 3, Level 2 and Level 1, provide opportunities to a range of experience levels from recent graduates to experienced scientists and engineers to participate in the program. For more information, click on this link.

Gordon and Betty Moore Foundation

New Limited Submission Moore Inventor Fellows (link) – Nominations must be received by 5:00 p.m. PT Monday, February 11, 2019, with full application materials due by 5:00 p.m. PT Monday, March 4, 2019. – Each fellow will receive a total of $825,000 over three years to drive their invention forward, including $50,000 per year from their home institution as a commitment to these outstanding individuals.

IARPA

New Activities in Extended Video (ActEV) Prize Challenge (link) – Registration and open leader board began December 4, 2018. The open leaderboard closes February 28, 2019. Winners will be announced in May 2018 and present in mid-2019. – The developers of the most accurate activity detection algorithms will be eligible to win one of three cash prizes from a total prize purse of $50,000 (USD). First Place Prize: $25,000; Second Place Prize: $15,000; Third Place Prize: $10,000.

NIH
New **Limited Submission NIH Enhancing Science, Technology, EnginEering, and Math Educational Diversity (ESTEEMED) Research Education Experiences (R25) ([link])** – LOI Due April 24, 2019; Application Due May 24, 2019 – The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Award Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

**Enabling Technologies to Accelerate Development of Oral Biodevices (R21 Clinical Trial Not Allowed) ([link])** – LOI Due December 28, 2018; Application Due January 28, 2019 – NIDCR intends to commit $3 million in FY 2020 to fund 3-4 awards. Award Budget: The combined budget for direct costs for the two year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.

**Enabling Technologies to Accelerate Development of Oral Biodevices (R01 Clinical Trial Not Allowed) ([link])** – LOI Due December 28, 2018; Application Due January 28, 2019 – NIDCR intends to commit $3 million in FY 2020 to fund 2-3 awards. Award Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

**Medical Simulators for Practicing Patient Care Providers Skill Acquisition, Outcomes Assessment and Technology Development (R01 Clinical Trial Not Allowed) ([link])** – LOI Due 30 Days Prior to Application; Standard Due Dates: February 5, June 5, October 5 – The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Award Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

**BRAIN Initiative: Research on the Ethical Implications of Advancements in Neurotechnology and Brain Science (R01 Clinical Trial Optional) ([link])** – LOI Due 30 Days Prior to Application; Application Due February 4, 2019 and October 9, 2019 – Issuing IC and partner components intend to commit an estimated total of $3 million in FY2019 to fund up to 8 awards. Award Budget: Application budgets are limited to $300,000 in direct costs in any project year and need to reflect the actual needs of the proposed project.

**Innovative Technologies for HIV Behavioral and Social Science Research (R41/R42 Clinical Trial Optional) ([link])** – Standard Due Dates: September 5, January 5, April 5 – According to statutory guidelines, total funding support (direct costs, indirect costs, fee) normally may not exceed $150,000 for Phase I awards and $1,000,000 for Phase II awards.

**Innovative Technologies for HIV Behavioral and Social Science Research (R43/R44 Clinical Trial Optional) ([link])** – Standard Due Dates: September 5, January 5, April 5 – According to statutory guidelines, total funding support (direct costs, indirect costs, fee) normally may not exceed $150,000 for Phase I awards and $1,000,000 for Phase II awards.

**Novel Approaches for Relating Genetic Variation to Function and Disease (R01 Clinical Trial Not Allowed) ([link])** – Standard Due Dates: February 5, June 5, October 5 – The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Award Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

**Novel Approaches for Relating Genetic Variation to Function and Disease (R21 Clinical Trial Not Allowed) ([link])** – Standard Due Dates: February 16, June 16, October 16 – The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Award Budget: The combined budget for direct costs for
the two-year project period may be up to $275,000 (exclusive of subcontract F&A). Up to $200,000 may be requested in any single year.

**Synthetic Biology for Engineering Applications (R01 Clinical Trial Optional)** ([link](#)) – Standard Due Dates: February 5, June 5, October 5 – The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Award Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

**NSF**

**Limited Submission** [NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)]([link](#)) – Full Due March 27, 2019 (Last Wednesday in March) – 60 to 80 awards; $70,000,000 to $95,000,000 annually, for new and continuing awards. The program supports three types of projects. Awards for Track 1 (Institutional Capacity Building) projects may not exceed $650,000. Awards for Track 2 (Design and Development: Single Institution) projects may not exceed $1.0 million. Awards for Track 3 (Design and Development: Multi-Institutional Consortia) projects may not exceed $5.0 million. In all cases, the totals are inclusive of direct and indirect costs.

**Harnessing the Data Revolution (HDR): Institutes for Data-Intensive Research in Science and Engineering – Ideas Labs (I-DIRSE-IL)** ([link](#)) – Prelim Due January 28, 2019; Full Due June 19, 2019 – Up to a total of $20 million is available for 10-15 two-year awards stemming from full proposals that will be developed in the Ideas Lab workshop.

**Mid-scale Research Infrastructure-2 (Mid-scale RI-2)** ([link](#)) – LOI Due February 8, 2019; Prelim Due March 11, 2019; Full Due August 2, 2019 – Estimated Number of Awards: 4 to 6; Total funds available are anticipated to be approximately $150 million over five years. Individual awards from $20 million to $70 million are anticipated for advanced design and implementation, pending availability of funds. Duration of the award may be up to five (5) years.

**Dear Colleague Letter: Leadership-Class Computing Allocations** ([link](#))

**Dear Colleague Letter: NSF Special Guidelines for Submitting Collaborative Proposals Under the SBE-UKRI Lead Agency Opportunity** ([link](#))

**Advanced Computing Systems & Services: Adapting to the Rapid Evolution of Science and Engineering Research** ([link](#)) – Full Due March 4, 2019 – Estimated Number of Awards: 2 to 4. The length of the award may vary depending on the type of resource funded. However, in most cases, it is expected to be up to 5 years. The details are described in the section entitled Program Requirements and should be carefully considered. Anticipated Funding Amount: $5,000,000 to $10,000,000 per award. A total of $30,000,000 is available for this solicitation, subject to the availability of funds. It is anticipated that 1-2 awards will be made in Category I at up to $10,000,000 per award for up to five years and up to 1-2 awards in Category II at up to $5,000,000 per award for up to five years.

**Enabling Quantum Leap: Quantum Idea Incubator for Transformational Advances in Quantum Systems (QII - TAQS)** ([link](#)) – LOI Due January 7, 2019; Prelim Due February 21, 2019; Full Due May 24, 2019 – Estimated Number of Awards: 18 to 20. Anticipated Funding Amount: $26,000,000. Anticipated funding amount is pending availability of funds. Each project team may receive support of up to a total of $2,000,000 over the project duration of 3 to 5 years. It is not expected that all awards will receive the maximum amount;
the size of awards will depend upon the type of research program proposed. The budget must be commensurate with the scope of the project and thoroughly justified in the proposal.

**Ideas Lab: Cross-cutting Initiative in CubeSat Innovations** ([link](#)) – Prelim Due February 8, 2019; Full Due May 30, 2019 – A CubeSat Innovation award is expected to be at the level of $750,000 - $1,000,000 per year for up to 4 years. Up to 2 awards are expected depending upon availability of funds and the type, scale, and variety of project ideas developed at the Ideas Lab.

**Spectrum Efficiency, Energy Efficiency, and Security (SpecEES): Enabling Spectrum for All** ([link](#)) – Full February 13, 2019 – Approximately 12-15 awards are anticipated, each up to $750,000 total and up to 3 years in duration, subject to the availability of funds and quality of proposals received.

**NSF/CASIS Collaboration on Tissue Engineering and Mechanobiology on the International Space Station (ISS) to Benefit Life on Earth** ([link](#)) – Due February 1 - February 15, 2019 – NSF Funding (total) available under this solicitation is up to $2.0 million to be distributed in FY 2019. Budget requests may be for up to $400,000 total, direct and indirect costs, and up to three years in duration.

**Algorithms for Threat Detection (ATD)** ([link](#)) – Full Due February 19, 2019 – Estimated Number of Awards: 10 to 20; Anticipated funding amount is $3,000,000 annually. Estimated number of awards and funding amounts are subject to the availability of funds.

**Scalable Parallelism in the Extreme (SPX)** ([link](#)) – Full Due January 17, 2019 – Approximately $10,000,000 will be made available in FY 2019 to support up to 10 awards with durations of 3-4 years and up to $3,000,000 per award.

**Partnerships for Innovation – Technology Translation (PFI-TT)** ([link](#)) – Full Due January 17, 2019; July 10, 2019 – PFI-Technology Translation (PFI-TT) projects will be funded for up to $250,000 for 18-24 months per award; approximately 40-50 awards are anticipated. **Note:** There is no limit on the number of PFI-TT proposals an organization may submit to a deadline of this solicitation. However, an organization may not submit more than one (1) new or resubmitted PFI-Research Proposal (PFI-RP) to a deadline of this solicitation. The internal limited submission deadline for PFI-Research Proposals has passed.

**NSF/FDA Scholar-in-Residence at FDA** ([link](#)) – Full Proposals Accepted Anytime – Estimated program budget of $750,000, estimate of 5-10 awards, average award size and duration (varies with funding opportunity outlined in Section II. Program Description) are subject to the availability of funds and the quality of proposals.

**The National Academies of Science, Engineering, and Medicine**

**New Gulf Research Program (Advance Safety Culture in the Offshore Oil and Gas Industry)** ([link](#)) – LOI Due February 13, 2019; Full Due April 17, 2019 – Up to $10 million

**W.M. Keck Foundation**

**New Limited Submission Keck Research Program** ([link](#)) – For the December grant cycle, Phase I applications must be submitted online no later than May 1, 4:30 p.m. (PT). – Historically, grants range from $500,000 and are typically $2 million of less.

**Requests for Information/Notices of Intent**

New **DOE Request for Information: Challenges and Opportunities for the American Solar Industry** (link) – Responses Due January 7, 2018

**Student/Postdoctoral Opportunities**

New **Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB)** (link) – Applications Due January 31, 2019 – $4,500 stipend, housing, meals and $600 travel allowance provided

NSF/FDA Scholar-in-Residence at FDA (link) – Full Proposals Accepted Anytime – Estimated program budget of $750,000, estimate of 5-10 awards, average award size and duration (varies with funding opportunity outlined in Section II. Program Description) are subject to the availability of funds and the quality of proposals.

This section contains resources, funding opportunities and seminars, events, and workshops of special interest to junior faculty. See Seminars/Events/Workshops below for more offerings.

**Junior Faculty Opportunities**

**Young Investigator Programs**

[http://tees.tamu.edu/researchsupport/young-investigator-programs/](http://tees.tamu.edu/researchsupport/young-investigator-programs/)

Young Investigator Programs are for junior faculty who are untenured, Assistant Professors. Resources are available including CAREER/YIP workshops and seminars, proposal assistance, writing resources, and junior faculty targeted funding opportunities.

**Junior Faculty Targeted Funding Opportunities** – This spreadsheet contains numerous funding opportunities for junior faculty in Engineering.

**Young Investigator Awards** – This spreadsheet lists early career and young investigator awards (general list).

**Opportunity for Assistant Professors**

There are funds available to help Assistant Professors in visiting funding agency program officers at DoD, DoE, NSF, DARPA, etc., when they are ready. Readiness will be assessed by Dr. Z.J. Pei based on a justification statement submitted by the faculty member, including expertise, experience, and research ideas. TEES will pay up to half of the cost of travel to Washington, D.C., for an approved Assistant Professor. Please contact Dr. Z.J. Pei, TEES Director of Research Development, at [zjpei@tamu.edu](mailto:zjpei@tamu.edu) for more information.

**Funding Opportunities**

*Future Funding Opportunities will be posted here.*
Seminars/Events/Workshops

Junior Faculty Proposal Writing Academy: NSF Broader Impacts & Education Plan Seminar & Expo
February 6, 2019
1:00 p.m. - 5:00 p.m.
ILSB Auditorium and Lobby
Information and Registration

NSF ENG CAREER Proposal Writing Workshop – The workshop is sponsored by the NSF Engineering Directorate and will be co-hosted by Kansas State University and Texas A&M University.
April 1-2, 2019
Washington, DC

Junior Faculty Proposal Writing Academy
The TEES Research Development group and the Division of Research’s Research Development Services office have partnered to create the Junior Faculty Proposal Writing Academy. For more information, please visit http://jfa.tamu.edu/.

Additional Resources
Facilities – A list of facilities for each department in the College of Engineering is available on the TEES Research Development website. Faculty can use this list in creating facilities statements for multi-PI proposals.
NSF Broader Impacts Expo List of Resources – A list of the organizations and resource representatives who participated in the NSF Broader Impacts Seminar and Expo.
Funding Opportunities Spreadsheet – A spreadsheet of funding opportunities from past digests.
Education/Broader Impacts – A list of resources available through EASA, College of Engineering, Texas A&M, and national resources.

Proposers Days/Webinars
(All times Central unless otherwise noted)

DOE Energy-Water Desalination Hub Informational Webinar
January 7, 2019
3:00 p.m. ET
Information and Registration

Texas Sea Grant’s Biennial Research Competition Pre-proposal Webinar
January 7, 2019
Information – For more information, contact Mia Zwolinski, Texas Sea Grant Research Coordinator, at mzwolinski@tamu.edu or 979-458-0449.

NSF Partnerships for Innovation Webinar
January 10, 2019
2:00 p.m. - 4:00 p.m. ET
Information and Registration

DARPA Materials, Architectures and Characterization for Hypersonics (MACH) Proposers Day and Webcast
January 22, 2019
1:00 p.m. - 5:30 p.m. ET
Executive Conference Center, 4075 Wilson Blvd., Suite 300, Arlington, VA
Information and Registration – The registration deadline is January 15, 2019.

Seminars/Events/Workshops for All Faculty
http://tees.tamu.edu/researchsupport/events/

ARPA-E Control Co-design of Floating Offshore Wind Turbines Industry Day
January 15, 2019
Washington, DC
For information about the Industry Day, please contact Max McGrath-Horn at Maxwell.Mcgrath-Horn@hq.doe.gov and please cc both Geoffrey Short and ARPA-E Program Director Mario Garcia-Sanz at geoffrey.short@hq.doe.gov; Mario.Garcia-Sanz@hq.doe.gov. For information on the Teaming Partner list, please click on this link.

STEM 4 Innovation Conference for K-12 Education
February 21-22, 2019
College Station – Lab tours are being held on February 21; Exhibitor Booths will be at the Texas A&M Hotel and Conference Center – Century Ballroom on February 22.
Information and Registration

NIH Regional Seminar on Program Funding and Grants Administration
May 15-17, 2019
Renaissance Baltimore Harborplace Hotel, Baltimore, MD
Information and Registration – In addition to the regional seminar, there are optional half-day pre-seminar workshops including eRA Workshop: Grant Application Preparation & Submission. For the list of optional workshops, please go to this link.

Research News

Artificial Intelligence Meets Materials Science
A Texas A&M engineering research team is harnessing the power of machine learning, data science and the domain knowledge of experts to autonomously discover new materials. The team developed and demonstrated an autonomous and efficient framework capable of optimally exploring a materials design space (the materials design space is an abstraction of the concrete world. It is the space of all the possible materials under study, characterized by fundamental material features).

The authors of this interdisciplinary work are Dr. Anjana Talapatra and Dr. Raymundo Arroyave from the Department of Materials Science and Engineering, and Shahin Boluki, Dr. Xiaoning Qian and Dr. Edward Dougherty from the Department Electrical and Computer Engineering. Their autonomous framework is capable of adaptively picking the best machine learning models to find the optimal material to fit any given criteria. Their research, funded by the National Science Foundation and the Air Force Office of Scientific Research, will reduce the time and cost spent going from lab to market by ensuring the greatest possible efficiency in the search for the right material.

To view the complete story, please visit the Engineering website.

Advancing Imaging Technology to Monitor Carbon Dioxide Use and Storage

The practice of separating carbon dioxide (CO2) from power plant emissions goes back more than 30 years, when concerns were raised about its effects on the atmosphere. Sequestering CO2 usually means capturing it during power plant processes and concentrating it in a compressed state so it can be injected in a geologic storage reservoir deep underground. A discovery in 1972 determined that compressed CO2 gas could enhance oil recovery when it was injected in a hydrocarbon reservoir. Using CO2 to produce more oil and gas would seem to be a win-win situation today – good for the environment and good for energy production – but underground reservoirs have fractures and faults, meaning CO2 can potentially escape. To date, CO2 monitoring is mostly limited to surface measuring near injection sites and rarely tracks its movement underground.

Dr. Akhil Datta-Gupta, a University Distinguished Professor in the Harold Vance Department of Petroleum Engineering, is working to broaden those monitoring capabilities. He is the principal investigator on a Texas A&M Engineering Experiment Station (TEES) research project to develop a better method to track CO2 storage and use in oil production. His method has the potential to be far more rapid, practical and cost-effective than current efforts, meaning it would be a true win for energy and the environment.

To view the complete story, please visit the Engineering website.

Prepared by TEES Research Development under the auspices of the Associate Agency Director for Strategic Initiatives and Centers. For questions, email researchnews@tees.tamus.edu.