

National Aeronautics and Space Administration



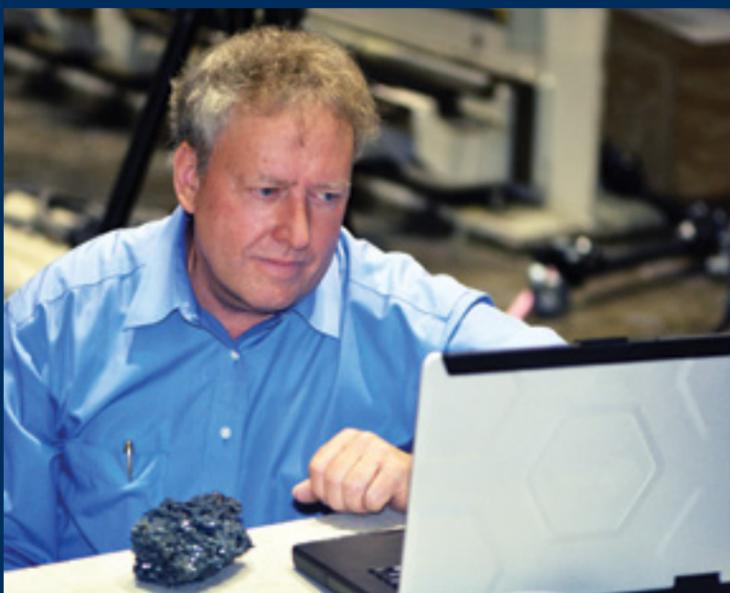
BRINGING NASA TECHNOLOGY DOWN TO EARTH

2019

**NASA TECHNOLOGY
TRANSFER PROGRAM**
Glenn Research Center

The Teletenna – a Hybrid Telescope Antenna System

Inventors:
Robert Romanofsky
Adam Wroblewski



Enables deep space missions by combining radio frequency and optical communications

Potential Applications:

- Aerospace
- Secure communications for aircraft
- Satellites



technology.grc.nasa.gov/patent/lew-tops-118

JANUARY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		NEW YEAR'S DAY				
		1	2	3	4	5
6	7	8	FILE YOUR NTR 9	10	11	12
13	14	15	16	17	18	19
	MARTIN LUTHER KING JR. DAY					
20	21	22	23	24	25	26
27	28	29	30	31		

Hall Effect Thruster Technologies

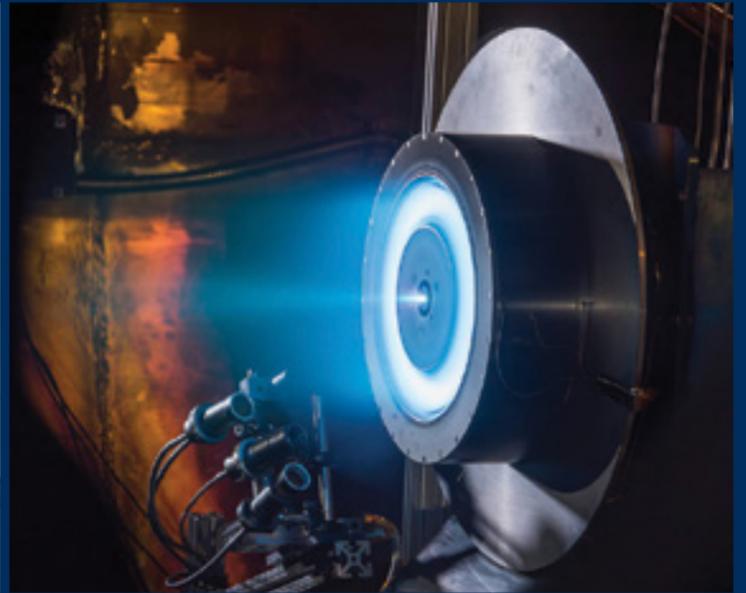
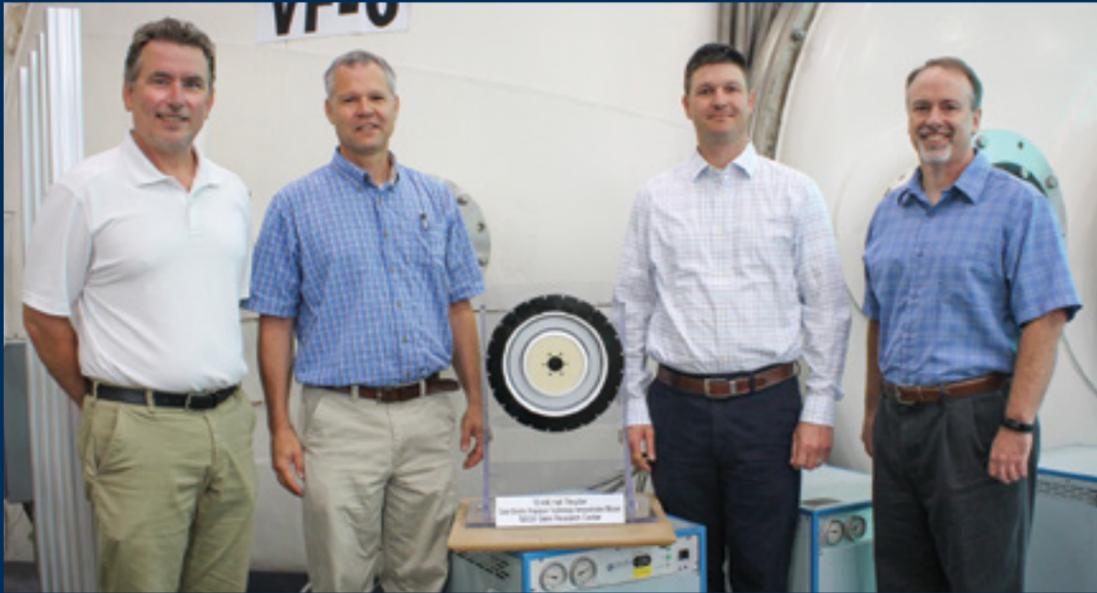
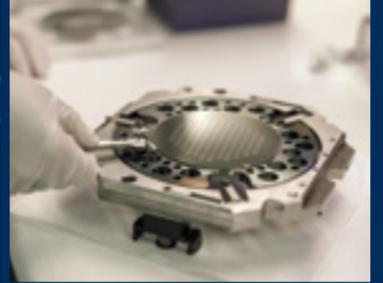
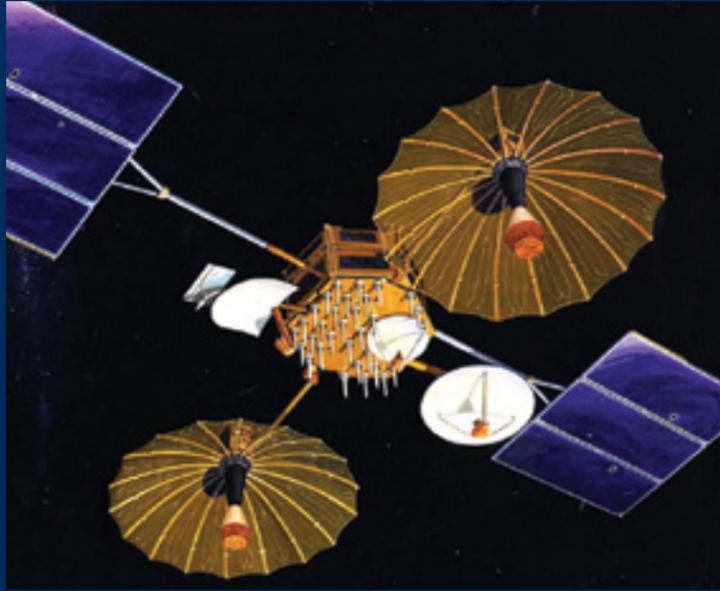
Inventors:
Robert Jankovsky
David Manzella
David Jacobson
Peter Peterson



New breakthroughs in durability and efficiency

Potential Applications:

- Satellite propulsion
- Material processing
- High-energy physics
- Deep space probes



technology.nasa.gov/patent/lew-tops-34

FEBRUARY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	FILE YOUR NTR 13	14	15	16
17	PRESIDENT'S DAY 18	19	20	21	22	23
24	25	26	27	28		

Optically Transparent Polyimide Aerogels

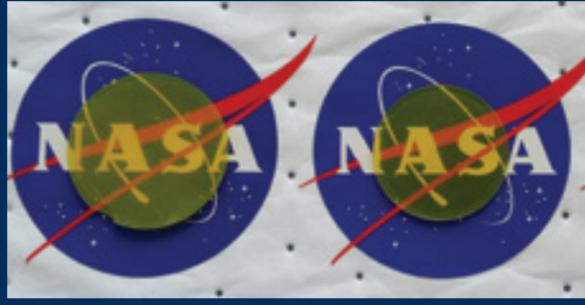
Inventors:
Mary Ann Meador
Stephanie Vivod



Highly porous aerogels with low thermal conductivity

Potential Applications:

- Acoustic insulation
- Aeronautics and aerospace
- Antennas
- Architecture and construction
- Automotive
- Camping and exercise gear
- Optoelectronics
- Optical sensors
- Protective clothing and gear
- Thermal insulation



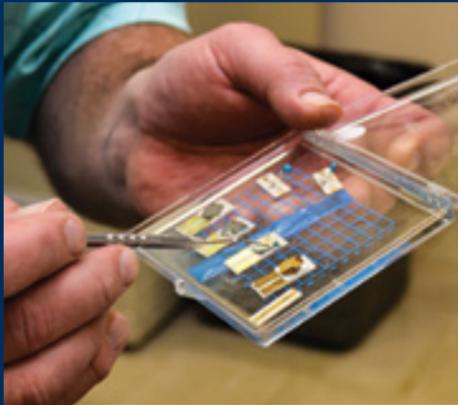
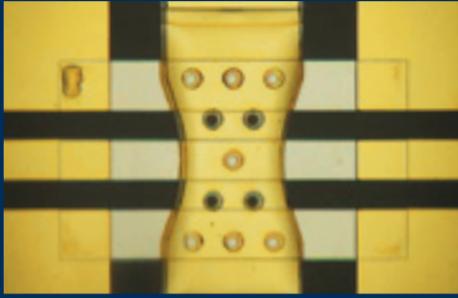
technology.grc.nasa.gov/patent/lew-tops-117

MARCH

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					1	2
3	4	5	6	7	8	9
10	11	12	FILE YOUR NTR 13	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29	30

High-Reliability Radio Frequency MEMS Switch

Inventor:
Maximillian Scardelletti



Improved RF performance with increased reliability

Potential Applications:

- Wireless communication
- Telecommunications
- Vehicle anti-collision systems
- Homeland security
- Satellite communication
- Industrial instrumentation
- Military
- Radar



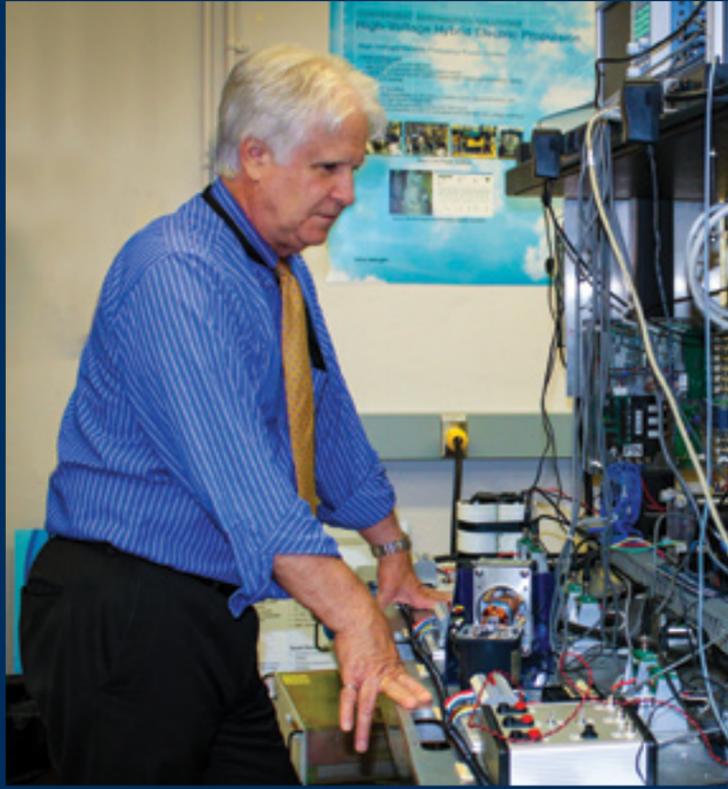
technology.grc.nasa.gov/patent/lew-tops-75

APRIL

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	1	2	3	4	5	6
7	8	9	FILE YOUR NTR 10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

High-Voltage Power System for Hybrid Electric Aircraft Propulsion

Inventor:
Raymond Beach



Variable-frequency, doubly-fed electric machines improve efficiency and reduce weight

Potential Applications:

- Commercial hybrid electric aircraft
- Hybrid electric unmanned aerial vehicles
- Power generation
- Ships



technology.grc.nasa.gov/patent/lew-tops-104

MAY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	FILE YOUR NTR 8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	MEMORIAL DAY 27	28	29	30	31	

Low-Power Charged Particle Detector

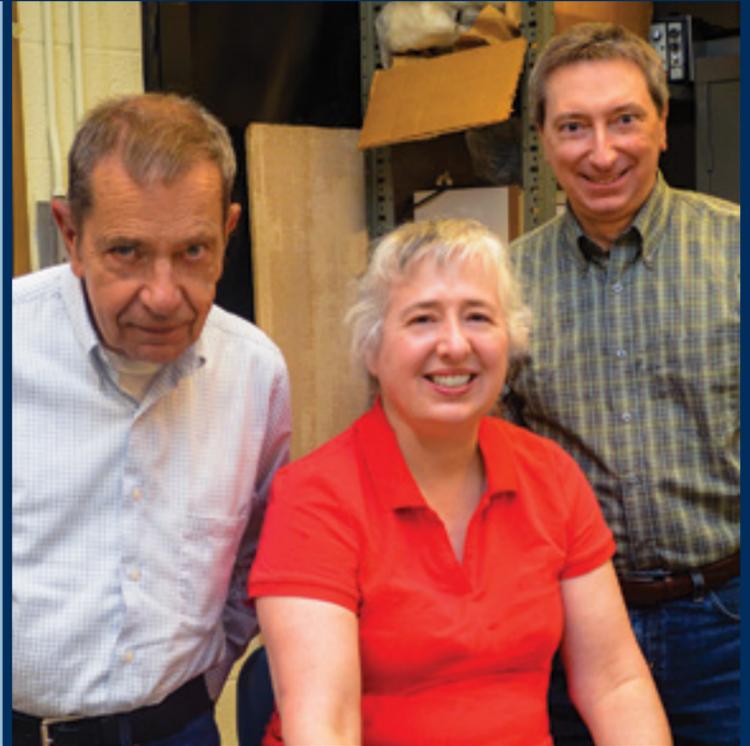
Inventors:
Gustave Fralick
Susan Wrbanek
John Wrbanek



Compact, solid-state charged particle counter for detecting and monitoring radiation

Potential Applications:

- Medical dosimetry, including nuclear medicine, x-rays, and positron emission tomography scans
- Safety monitoring for mining operations
- Oil and gas exploration
- Radiation monitoring during high-altitude and transpolar flights
- Nuclear facility monitoring
- Satellites, landers, and rovers
- High-energy physics



technology.grc.nasa.gov/patent/lew-tops-71

JUNE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	FILE YOUR NTR 12	13	14	15
16	17	18	19	20	21	22
23 30	24	25	26	27	28	29

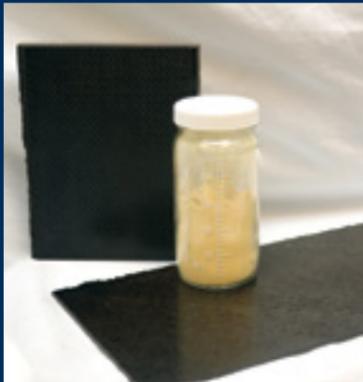
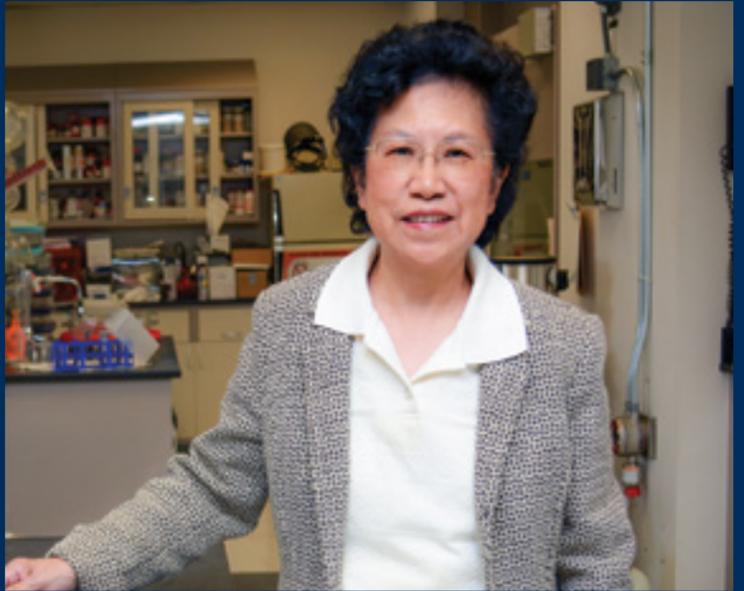
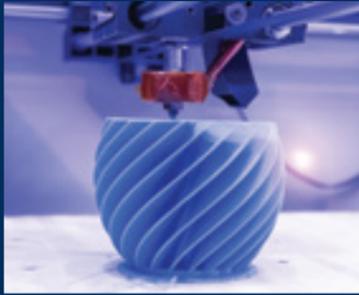
Resin Transfer Molding (RTM) 370 Resin for High-Temperature Applications

Inventor:
Chun-Hua (Kathy) Chuang

A solvent-free, low-melt process for creating a high-performance resin with zero emissions

Potential Applications:

- Aircraft components
- Oil drilling
- Construction
- Electrical
- Aerospace
- Automotive



technology.grc.nasa.gov/patent/lew-tops-115

JULY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				INDEPENDENCE DAY		
	1	2	3	4	5	6
7	8	9	FILE YOUR NTR 10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

A Tool to Evaluate the Dynamic Capability of Turbine Engines

Inventors:
Sanjay Garg
Jeffrey Csank



Revolutionary technology for early-stage engine design optimizes performance and operability

Potential Applications:

- Jet airplanes
- Helicopters
- Hovercraft
- Ships
- Spacecraft



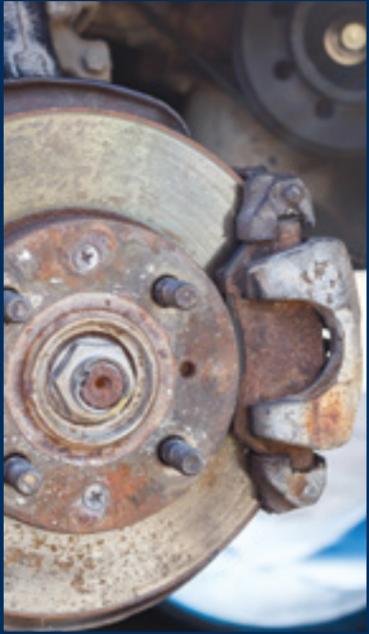
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AUGUST

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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4	5	6	7	8	9	10
11	12	13	FILE YOUR NTR 14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Robust Sensors Detect Material Ablation and Temperature Changes

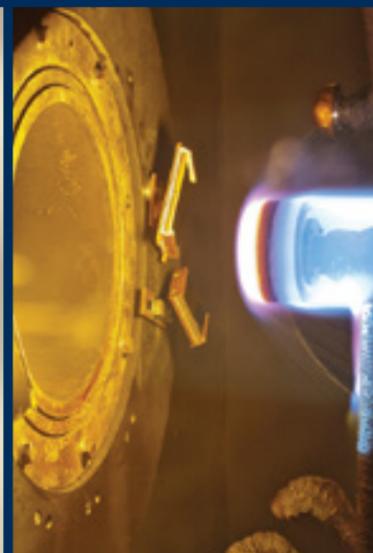
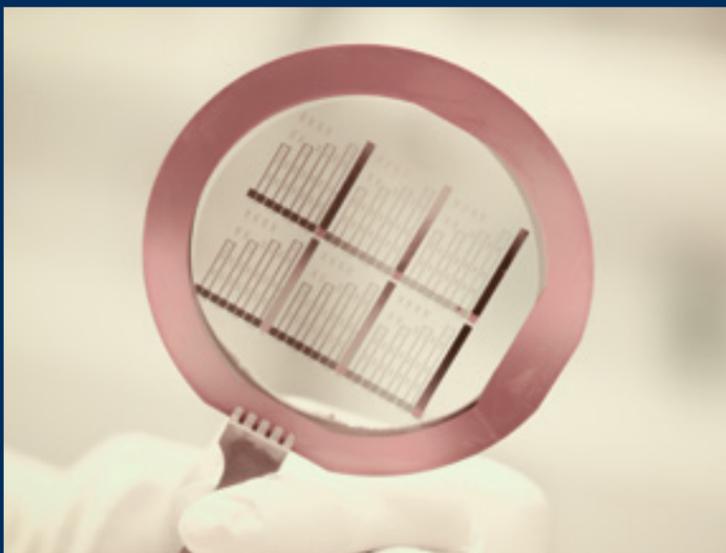
Inventor:
Robert Okojie



Embedded and arrayed sensors enable large-area sensing in thermal protection systems and more

Potential Applications:

- Vehicle brake systems
- Thermal protection systems for space vehicles, missiles, and hyper-loop vessels
- Pipe erosion by liquid sand during fracking
- Nuclear containment and safety critical systems
- Infrastructure prone to corrosion, erosion, or ablation



technology.grc.nasa.gov/patent/lew-tops-83

SEPTEMBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	LABOR DAY					
1	2	3	4	5	6	7
8	9	10	FILE YOUR NTR 11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Seal with Integrated Shroud to Protect from Exposure to Extreme Environments

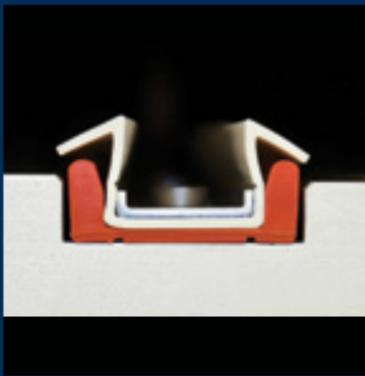
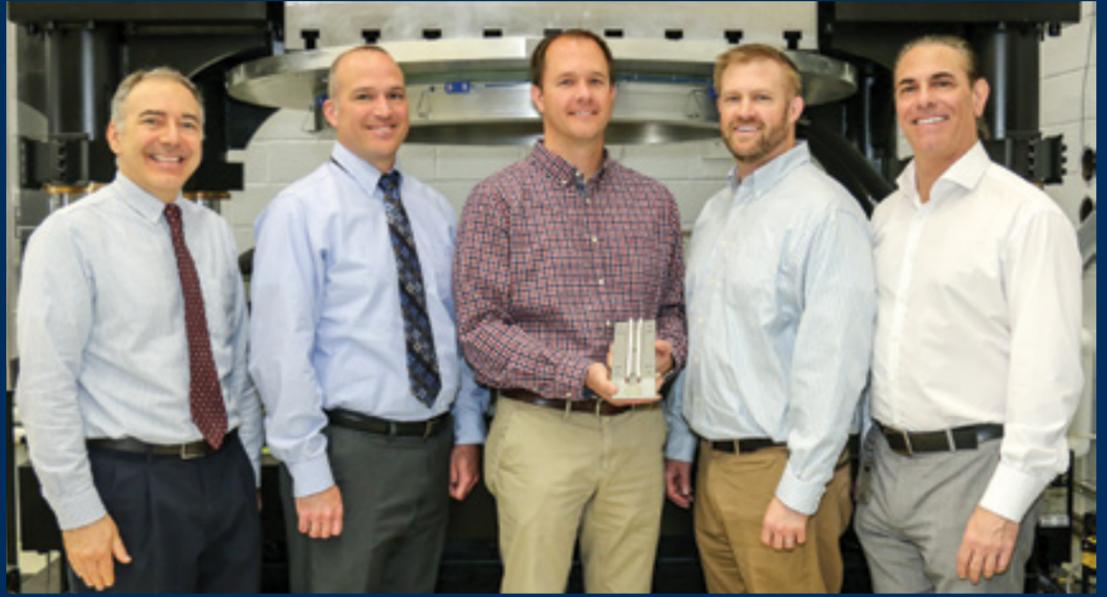
Inventors:
Gary Drlik (Vantage Partners, LLC)
Christopher Daniels (University of Akron)
Patrick Dunlap
John Mayer (Vantage Partners, LLC)
Gary Pease



A durable seal design with extremely low leak rates

Potential Applications:

- Aerospace
- Agriculture
- Building construction
- Maritime
- Petroleum
- Pharmaceutical
- Plastics processing



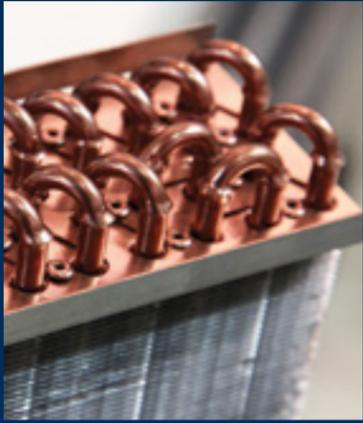
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OCTOBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	FILE YOUR NTR	10	11	12
	COLUMBUS DAY					
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Engineered Matrix Self-Healing Composites

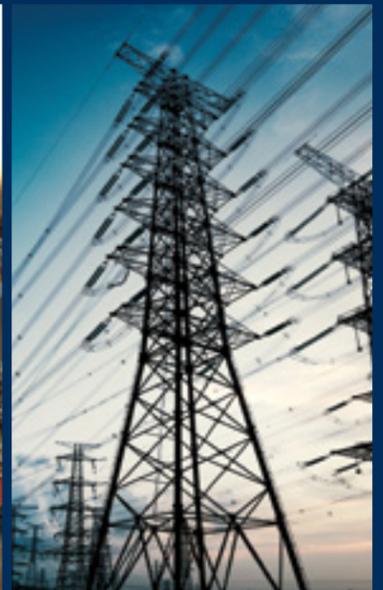
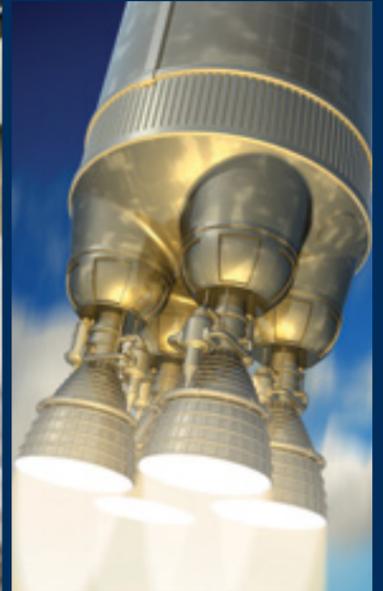
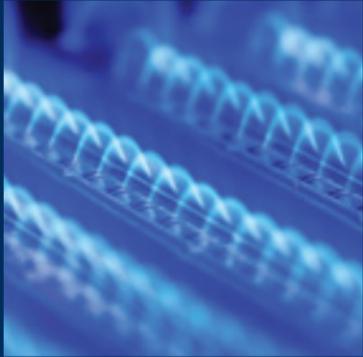
Inventors:
Sai Raj
Ramakrishna Bhatt (Ohio Aerospace Institute)
Mrityunjay Singh (Ohio Aerospace Institute)



Innovative approach for improved SiC/SiC ceramic matrix composites

Potential Applications:

- Jet turbine engines
- Land-based power generation
- Nuclear fission and fusion reactors
- Heat exchangers
- Furnace components



technology.grc.nasa.gov/patent/lew-tops-30

NOVEMBER

Sunday

Monday

Tuesday

Wednesday

Thursday

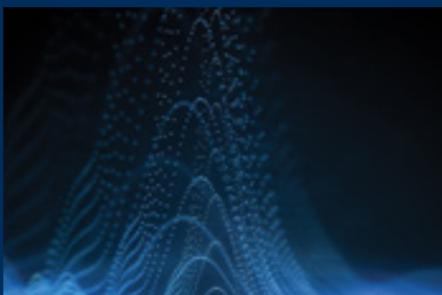
Friday

Saturday

						1	2
3	4	5	6	7	8	9	
10	VETERANS DAY	12	FILE YOUR NTR	14	15	16	
17	18	19	20	21	22	23	
24	25	26	27	THANKSGIVING DAY	29	30	

Signal Combiner for Wideband Communication

Inventors:
James Downey
Joseph Downey
Bryan Schoenholz



A frequency division multiplexer combined with an analog-to-digital converter increases efficiency

Potential Applications:

- Communications satellites
- Wireless communications
- Military communications
- Signal processing
- Telemetry
- Telecommunications
- Ground stations
- Software-defined radios



technology.grc.nasa.gov/patent/lew-tops-113

DECEMBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	FILE YOUR NTR 11	12	13	14
15	16	17	18	19	20	21
22	23	24	CHRISTMAS DAY 25	26	27	28
29	30	31				



A new technology is any invention, discovery, improvement, or innovation—whether or not patentable—which includes, but is not limited to, new processes (or new applications of existing processes), machines, manufactures, and compositions of matter. New technologies also include new computer programs, and improvements to, or new applications of, existing computer programs.

Any solution to a technical problem or new way of doing things that is somehow better than before is reportable as a New Technology Report (NTR). Any improvement—no matter how big or small—should be reported in an NTR.

We Are Here to Help You



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216.433.8063

Bring your New Technology Down to Earth

It is our responsibility at NASA to help drive innovation. One of the most successful ways to do this is by transferring our technology into the marketplace.

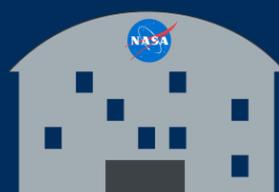
We are here to help you get your technology recognized and used by millions. The first step is submitting your NTR!

How to submit your NTR

Submitting your NTR is easy. Just go to invention.nasa.gov and get started. The process takes under one hour. If you don't have time or need help, please email us at grc-techtransfer@mail.nasa.gov. Our Technology Managers oversee our portfolio of technologies and can assist you.

Benefits of filing NTRs

Reported technologies can potentially lead to patents, awards, financial compensation, and connections to further the science and R&D. Submitting an NTR will definitely win you a partner in the Technology Transfer Office that will share your vision for moving the technology out beyond NASA.



Contact us at grc-techtransfer@mail.nasa.gov. We will connect you with the appropriate Technology Manager.





National Aeronautics and Space Administration
NASA Glenn Research Center

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