

TECHNOLOGY ROUNDUP

A NEWS BULLETIN

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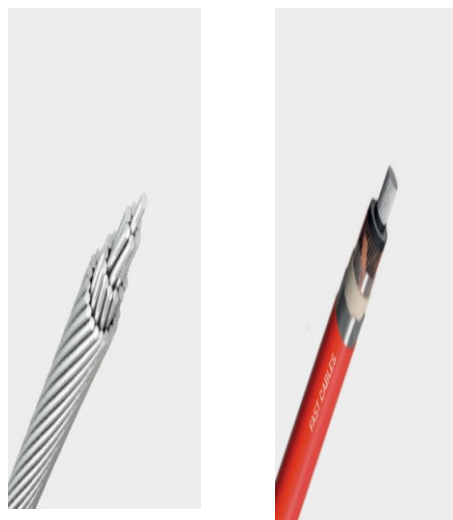
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Forthcoming Tech Events

- International Conference on Medical, Biological and Pharmaceutical Sciences
- International Conference on Environment and Natural Sciences
- International Conference on Rehabilitation Science
- World Congress on Information Technology
- International Conference on Science Engineering & Technology
- 3rd International Conference on Science Engineering & Technology
- International Congress on History of Science and Technology
- International Conference on Molecular Biology and Microbiology

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Opportunities for Increasing Trade of Health-Related Products between UK and Pakistan

The Covid-19 pandemic had significant socio-economic fallout for economies around the world. While the world is struggling to cope with the challenge, demand for PPE, notably face masks, ventilators, scrubs, face shields, and variety of medical clothing etc has raised globally as well as in UK to an extraordinary level. Pakistan's credential as a reliable supplier of textile and health related products globally is also capable enough to meet the UK's conformity assessment standards for PPE. Therefore all the Pakistani scientists, engineers and businessmen involved in production of medical and safety-related equipment of export quality and have got their products CE and FDA certified or in the process of acquiring these certifications can exploit the business opportunities for their PPE products in UK. This venture will prove helpful for contributing to the socio-economic sustainability and mutual economic cooperation globally.



Courtesy: <https://pk.mashable.com/coronavirus/3565/pakistan-allows-export-of-personal-protective-equipments-ppes-and-sanitizers>

Personal protective equipment (Made in Pakistan)

Product categories:

1. Non-woven: body suits/gown (Coveralls)
2. Fabric body covers
3. Face masks
4. Face protection equipment
5. Hospital supplies
6. Hand sanitizers
7. Temperature equipment

Sample Product List:

1. Laminated PP Suit Non-Woven 70 GSM (40 GSM fabric/30 GSM Lamination)
2. Laminated PP Suit Non-Woven 90 GSM (40 GSM fabric/30 GSM Lamination)
3. Non-woven disposable PP Suits 60 GSM
4. Doctor Coat Fabric
5. Patient gown (paramedic staff) blue
6. Patient gown (paramedic staff) white

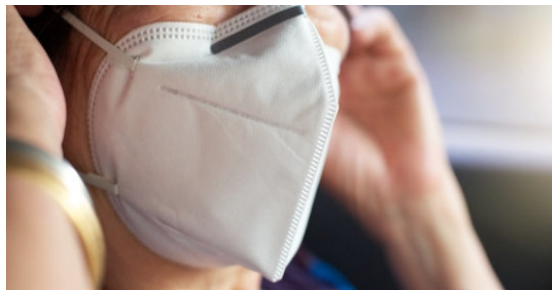
7. Micro Fabric Laminated Suit
8. Hospital sheets
9. Fabric gown for paramedic staff
10. 3 ply masks 60 GSM
11. Cotton masks
12. Face goggles
13. Face shield
14. Hand sanitizers
15. Thermometer contactless

Source:

Ministry of Science & Technology (MoST), Government of Pakistan and High Commission for Pakistan, London, UK

Inexpensive, accessible Device provides visual proof that masks block droplets: Study demonstrates a simple way to test facial covering Materials for Effectiveness

In a proof-of-concept study, researchers report that a simple, low-cost technique provided visual proof that face masks are effective in reducing droplet emissions during normal wear. They found that the best face coverings were N95 masks without valves -- the hospital-grade coverings that are used by front-line health care workers. Surgical or polypropylene masks also performed well. Hand-made cotton face coverings provided good coverage, eliminating a substantial amount of the spray from normal speech. But bandanas and neck fleeces such as balaclavas didn't block the droplets much at all.



Person putting on face mask (stock image). Credit: © Tanakorn / stock.adobe.com

Scientists confirmed that when people speak, small droplets get expelled, so disease can be spread by talking, without coughing or sneezing. More work is required to investigate variations in masks, speakers, and how people wear them -- but it demonstrates that this sort of test could easily be conducted by businesses and others that are providing masks to their employees or patrons. It's important that businesses supplying masks to the public and employees have good information about the products they're providing to assure the best protection possible. The parts for the test apparatus are accessible and easy to assemble.

This method will help in making decision on what type of face covering to purchase in volume, and little information was available on these new materials that were being used.

Source:

www.sciencedaily.com/release/2020/08/200811152916.html

Pakistani Aerospace Engineer Aims to make Air Travel Sustainable

With an immense passion for aviation, care for the environment, experience of flying, and powered by a PhD degree, a female Pakistani scientist is on a mission to save the planet by transforming the aviation industry.



Dr. Sarah Qureshi ready to roll at Walton Airport Lahore.

Dr. Sarah Qureshi, considered a trailblazer for women in Pakistan, is developing the world's first contrail-free aircraft engine to reduce aviation induced global warming and make air travel environmentally safe. The Pakistani aerospace engineer aims to solve a problem no one is addressing.

The invention can reduce the impact of aircraft pollution due to contrails, which we hardly notice. White thin streak that jets leave across the sky are artificial clouds called contrails (condensation trails), produced by aircraft engine exhaust. The hot water vapour, a combustion byproduct of hydrocarbon fuel burn, when released in the atmosphere instantly freezes, as the temperature is extremely cold at 10,000 metres altitude. The climate impact of contrails or ice clouds that can trap heat inside the atmosphere has remained neglected even though studies suggest that contrail clouds have contributed more to warming the atmosphere than all of the carbon dioxide (CO₂) emitted by aircraft. The scientific community believes that contribution of contrails is five times high than that of CO₂.

The invention is a turbomachinery which can be fitted onto an engine to separate out the water vapour of the exhaust emissions and contain it on the aircraft to be released before landing to reduce global warming, benefitting both the environment and the aviation industry in the long run. The technology does not have a direct impact on unmanned aerial vehicles (UAVs) because drones have smaller engines, shorter flight times and fly at low altitudes.

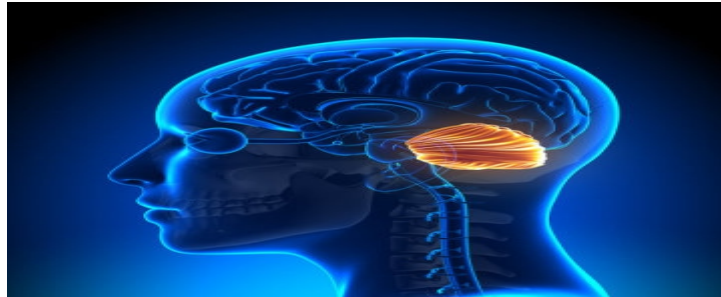
She established Pakistan's first private commercial aerospace company, Aero Engine Craft, together with her father, Masood Latif Qureshi, in 2018. The company received seed money on equity funding from Karandaaz Pakistan that supports women-led startups and some help from National Incubation Center at LUMS. "If we can build it locally and become self-sufficient in this technology, Pakistan would become one of the very few countries in the world that develops aircraft engines," affirms Dr. Qureshi.

Source:

[www.gulfnews.com/worldasiapakistan-Pakistani-aerospace-engineer aimstomakeairtravelsustainable-1.171886095](http://www.gulfnews.com/worldasiapakistan-Pakistani-aerospace-engineer-aimstomakeairtravelsustainable-1.171886095)

Little brain' or Cerebellum not so little after all

When we say someone has a quick mind, it may be in part thanks to our expanded cerebellum that distinguishes human brains from those of macaque monkeys, for example. High-resolution imaging shows the cerebellum is 80 percent of the area of the cortex, indicating it has grown as human behavior and cognition evolved.



Cerebellum highlighted in illustration of brain (stock image). Credit: © decade3d / stock.adobe.com

Sometimes referred to by its Latin translation as the "little brain", the cerebellum is located close to the brainstem and sits under the cortex in the hindbrain. New research at San Diego State University, however, calls the "little" terminology into question. The cerebellum plays a versatile role, contributing to our five senses as well as pain, movements, thought, and emotion. It's essentially a flat sheet with the thickness of a crepe, crinkled into hundreds of folds to make it fit into a compact volume about one-eighth the volume of the cerebral cortex. For this reason, the surface area of the cerebellum was thought to be considerably smaller than that of the cerebral cortex. By using an ultra-high-field 9.4 Tesla MRI machine to scan the brain and custom software to process the resulting images, an SDSU neuroimaging expert discovered the tightly packed folds actually contain a surface area equal to 80% of the cerebral cortex's surface area. In comparison, the macaque's cerebellum is about 30% the size of its cortex.

"The fact that it has such a large surface area speaks to the evolution of distinctively human behaviors and cognition," said Martin Sereno, psychology professor, cognitive neuroscientist and director of the SDSU MRI Imaging Center. "It has expanded so much that the folding patterns are very complex." Scientists used customized open source FreeSurfer software to computationally reconstruct the folded surface of the cerebellum. The software also unfolds and flattens the cerebellar cortex so as to visualize it to the level of each individual folia -- or thin leaflike fold.

A pioneer in brain imaging who has leveraged functional MRI to uncover visual maps in the brain, Sereno found that when the cerebellum is completely unfolded, it forms a strange "crepe" four inches wide by three feet long. We now have a complete map or surface representation of the cerebellum, much like cities, counties, and states." Previous research discovered that while there were many similarities between the cortex and the cerebellum, there was one key difference. In the cerebral cortex, regions representing different parts of the body are arranged roughly like they are in the actual body: juxtaposed and orderly. But in the cerebellum, they were placed more randomly. Those parts of the cerebellum are therefore set up to pull in and coordinate information from disparate parts of the body.

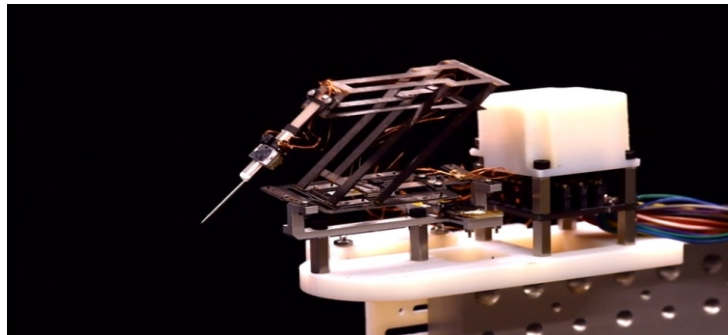
Source:

www.sciencedaily.com/releases/2020/07/200731135558.html

Cutting Surgical Robots down to Size

Origami-inspired miniature manipulator improves precision and control of teleoperated surgical procedures

Teleoperated surgical robots are becoming commonplace in operating rooms, but many are massive (sometimes taking up an entire room) and difficult to manipulate. Medical researchers and engineers have now created the mini-RCM, a surgical robot the size of a tennis ball that weighs as much as a penny, and performed significantly better than manually operated tools in delicate mock-surgical procedures.



The mini-RCM is controlled by three linear actuators (mini-LAs) that allow it to move in multiple dimensions and help correct hand tremors and other disturbances during teleoperation. Credit: Wyss Institute at Harvard University. <https://wyss.harvard.edu/news/cutting-surgical-robots-down-to-size/>

Minimally invasive laparoscopic surgery, in which a surgeon uses tools and a tiny camera inserted into small incisions to perform operations, has made surgical procedures safer for both patients and doctors over the last half-century. Recently, surgical robots have started to appear in operating rooms to further assist surgeons by allowing them to manipulate multiple tools at once with greater precision, flexibility, and control than is possible with traditional techniques. However, these robotic systems are extremely large, often taking up an entire room, and their tools can be much larger than the delicate tissues and structures on which they operate.

To create their miniature surgical robot, Suzuki and Wood turned to the Pop-Up MEMS manufacturing technique developed in Wood's lab, in which materials are deposited on top of each other in layers that are bonded together, then laser-cut in a specific pattern that allows the desired three-dimensional shape to "pop up," as in a children's pop-up picture book. This technique greatly simplifies the mass-production of small, complex structures that would otherwise have to be painstakingly constructed by hand.

The Pop-Up MEMS method is proving to be a valuable approach in a number of areas that require small yet sophisticated machines, and it was very satisfying to know that it has the potential to improve the safety and efficiency of surgeries to make them even less invasive for patients.

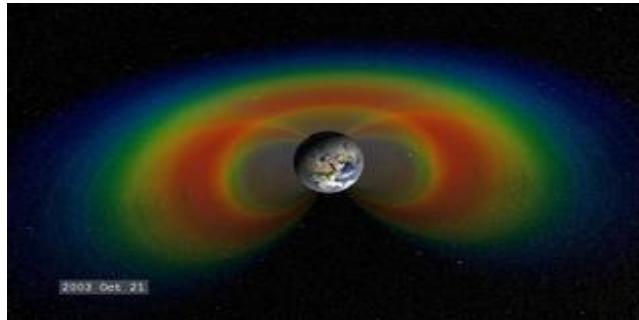
The researchers aim to increase the force of the robot's actuators to cover the maximum forces experienced during an operation, and improve its positioning precision. They are also investigating using a laser with a shorter pulse during the machining process, to improve the mini-LAs' sensing resolution.

Source

www.sciencedaily.com/releases/2020/08/200825110513.html

NASA Researchers track slowly Splitting 'Dent' in Earth's Magnetic Field

Earth's magnetic field acts like a protective shield around the planet, repelling and trapping charged particles from the Sun. But over South America and the southern Atlantic Ocean, an unusually weak spot in the field -- called the South Atlantic Anomaly, or SAA -- allows these particles to dip closer to the surface than normal.



When solar material streams strikes Earth's magnetosphere, it can become trapped and held in two donut-shaped belts around the planet called the Van Allen Belts. The belts restrain the particles to travel along Earth's magnetic field lines, continually bouncing back and forth from pole to pole. **Credits: NASA Goddard / Tom Bridgman.** [The Radiation Belts as seen by SAMPEX](#)

A small but evolving dent in Earth's magnetic field can cause big headaches for satellites.

The South Atlantic Anomaly is also of interest to NASA's Earth scientists who monitor the changes in magnetic field strength there, both for how such changes affect Earth's atmosphere and as an indicator of what's happening to Earth's magnetic fields, deep inside the globe.

Currently, the SAA creates no visible impact on daily life on the surface. However, recent observations and forecasts show that the region is expanding westward and continuing to weaken in intensity. It is also splitting -- recent data shows the anomaly's valley, or region of minimum field strength, has split into two lobes, creating additional challenges for satellite missions.

A host of NASA scientists in geomagnetic, geophysics, and heliophysics research groups observe and model the SAA, to monitor and predict future changes -- and help prepare for future challenges to satellites and humans in space.

The changing SAA provides researchers new opportunities to understand Earth's core, and how its dynamics influence other aspects of the Earth system, said Kuang. By tracking this slowly evolving "dent" in the magnetic field, researchers can better understand the way our planet is changing and help prepare for a safer future for satellites.

Source:

www.nasa.gov/feature/nasa-researchers-track-slowly-splitting-dent-in-earths-magnetic-field

COVID-19 Lockdown caused 50 percent global reduction in Human-linked Earth Vibrations

The lack of human activity during lockdown caused human-linked vibrations in the Earth to drop by an average of 50 percent between March and May 2020.



Seismograph (stock image).Credit: © Anna / stock.adobe.com

Measured by instruments called seismometers, seismic noise is caused by vibrations within the Earth, which travel like waves. The waves can be triggered by earthquakes, volcanoes, and bombs -- but also by daily human activity like travel and industry.

This quiet period, likely caused by the total global effect of social distancing measures, closure of services and industry, and drops in tourism and travel, is the longest and most pronounced quiet period of seismic noise in recorded history. The new research, led by the Royal Observatory of Belgium and five other institutions around the world including Imperial College London, showed that the dampening of 'seismic noise' caused by humans was more pronounced in more densely populated areas. The relative quietness allowed researchers to listen in to previously concealed earthquake signals, and could help us differentiate between human and natural seismic noise more clearly than ever before.

Although 2020 has not seen a reduction in earthquakes, the drop in human-caused seismic noise is unprecedented. The strongest drops were found in urban areas, but the study also found signatures of the lockdown on sensors buried hundreds of metres underground and in more remote areas.

The study uniquely highlights just how much human activities impact the solid Earth, and could let us see more clearly than ever what differentiates human and natural noise.

Source:

www.sciencedaily.com/releases/2020/07/200723143728.html

Forthcoming Tech Events

Pakistan

International Conference on Medical, Biological and Pharmaceutical Sciences

28-29 October, 2020

Rawalpindi Pakistan

www.iastem.org/Conference2020/Pakistan/1/ICMBPS/

International Conference on Environment and Natural Sciences

28-29 October, 2020

Rawalpindi Pakistan

www.iastem.org

International Conference on Rehabilitation Science

28-29 November, 2020

Rawalpindi Pakistan

www.iser.co/conference2020

World Congress on Information Technology

19-20 January, 2021

Sargodha

www.conferencealert.com/conf-detail.php?ev_id=368372

International

International Conference on Science Engineering & Technology

28-29 January, 2021

Singapore

www.icest.net

3rd International Conference on Research in Science, Engineering & Technology

11-13 March, 2021

Oxford UK

www.icsthhttps://www.icrset.org/

International Congress on History of Science and Technology

25-31 July, 2021

Czech Republic Prague

www.ichst2021.org

International Conference on Molecular Biology and Microbiology

2-3 December, 2021

Tokyo, Japan

[www.waset.org/molecularbiology and Microbiology conferencein november2021in](http://www.waset.org/molecularbiologyandMicrobiologyconferencein november2021in)

Tech & Trade Offers

Fast Cables

✍ Since its inception in 1985, Fast Cables Limited has emerged as Pakistan's leading and most trusted electrical cable manufacturer.

✍ At Fast Cables quality is our first priority combined with superior customer service and affordability. Our emphasis on quality has made Fast Cables one of the most reliable brands in the Cable Industry of Pakistan and the choice of leading electrical consultants, engineers and architects in the country.

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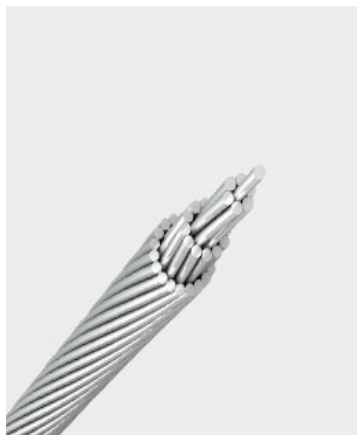
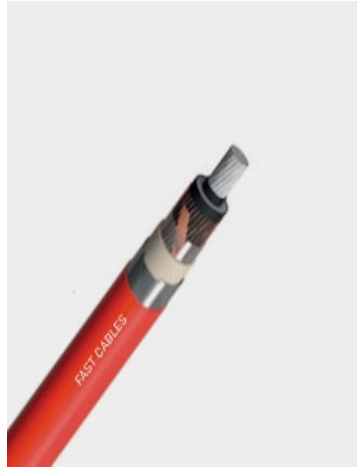
✍ First CCV Line Company of Pakistan

✍ First Aluminium Alloy Plant in Pakistan

✍ First Lab Testing Facility upto 75kV

✍ First 33kV Cable Manufacturer of Pakistan

✍ Inauguration of Unit-2 Cable Manufacturing Facility Brand of the Year 2017



About PASTIC

PASTIC serves as a gateway for Scientific & Technological Information for R&D by catering to the information needs of researchers, entrepreneurs, industrialists, educationists, policy makers and planners through anticipatory and responsive information services.

Technology Information Section works exclusively for support and promotion of technological information on trade and industry in the country. "Technology Roundup" is a news bulletin that provides latest and innovative technology news, forthcoming events, etc. It also promotes products, technologies and services globally in sectors such as Agro-Industry, Bio-Technology, Building Material, Business, Chemicals, Electronics, Energy, Fisheries, Food Processing, Machinery, Packaging, Mining Pharmaceuticals and Textiles.

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