

FORTNIGHTLY ENGINEERING REVIEW

The voice of engineers

Founded by **Najam ul Hassan (Marhoom)**
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Aiming to slow China's advances, govern technology

US moves to regulate artificial intelligence, signs order

President Biden signed a far-reaching executive order on artificial intelligence last week, requiring that companies report to the federal government about the risks that their systems could aid countries or terrorists to make weapons of mass destruction. The order also seeks to lessen the dangers of "deep fakes" that could swing elections or swindle consumers.

"Deep fakes use A.I.-generated audio and

constructed artificial intelligence system could convincingly create a presidential statement that never happened — and thus touch off a political or national security crisis. "I said, 'When the hell did I say that?'"

The order is an effort by the president to demonstrate that the United States, considered the leading power in fast-moving artificial intelligence technology, will also take the lead in its regulation. Already, Europe is moving ahead with rules of its own, and Vice President Kamala Harris is traveling to Britain this week to represent the United States at an international confer-

government departments, is limited in its scope. While Mr. Biden has broad powers to regulate how the federal government uses artificial intelligence, he is less able to reach into the private sector. Though he said that his order "represents bold action," he acknowledged that "we still need Congress to act."

Still, Mr. Biden made it clear that he intended the order to be the first step in a new era of regulation for the United States, as it seeks to put guardrails on a global technology that offers great promise — diagnosing diseases, predicting floods and other effects of climate change, improving

safety in the air and at sea — but also carries significant dangers.

"One thing is clear: To realize the promise of A.I. and avoid the risks, we need to govern this technology," Mr. Biden said. "There's no other way around it, in my view."

The order centers on safety and security mandates, but it also contains provisions to encourage the development of A.I. in the United States, including attracting foreign talent to American companies and laboratories. Mr. Biden acknowledged that another element

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video to smear reputations, spread fake news and commit fraud," Mr. Biden said at the signing of the order at the White House. He described his concern that fraudsters could take three seconds of a person's voice and manipulate its content, turning an innocent comment into something more sinister that would quickly go viral.

"I've watched one of me," Mr. Biden said, referring to an experiment his staff showed him to make the point that a well-

ence organized by that country's prime minister, Rishi Sunak.

"We have a moral, ethical and societal duty to make sure that A.I. is adopted and advanced in a way that protects the public from potential harm," Ms. Harris said at the White House. She added, "We intend that the actions we are taking domestically will serve as a model for international action."

But the order issued by Mr. Biden, the result of more than a year of work by several

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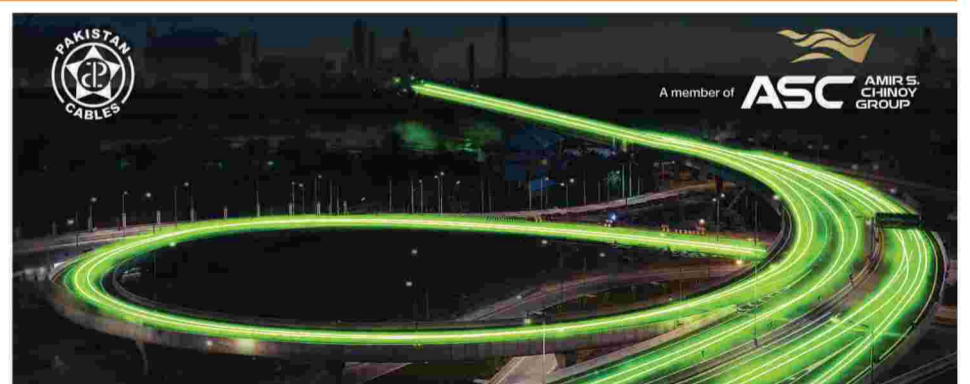
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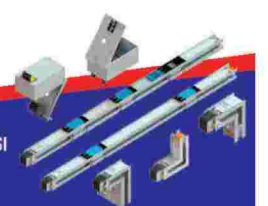
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Over 65 students papers presented by various universities 1st Two-day National Student Symposium at QUEST Nawabshah

Under the aegis of the IEEEEP Nawabshah Centre, "The First Two-Day National Student Symposium" was organized in Quaid e Awam University of Engineering Science and technology, Nawabshah on October 23 and 24, 2023.

The event was graced with the presence of Prof. Dr. Saleem Raza Samo, the Vice Chancellor of Quaid e Awam University of

(Dean Faculty of Electrical Electronics and Computer Engineering), Dr. Munsif Ali Jaoti from Salim Habib University, and Professor Dr. Shakeel from Sir Syed University of Engineering Technology staged their informative keynote talks.

In the presentations session, several emerging scholars, students, and senior academics from different institutions across Sindh gave their presentations, which were moderated by the senior research scholars. Following the assessment of the presentations, the names of three first position holders



Engineering Science and Technology (QUEST), Nawabshah.

Following the recitation of the glorious Quran, the event was graced with some keynote talks by the guest speakers and other scholars from different institutions. Engr. Muhammad Hafiz Muhammad Bilal Basheer from IEEEEP, Rizwan Aziz Siddiqui (Registrar QUEST), Prof. Abdul Sattar Saand (Chair IEEEEP Nawabshah Centre), Engr. Shahid Qureshi (Honorary Secretary IEEEEP Nawabshah Centre), Prof. Dr. Abdul Fatah Chandio

were announced and thus the winners (Gold, Silver and Bronze) were awarded with cash prizes.

The guest of honor at the event, Prof. Dr. Saleem Raza Samo (Vice Chancellor, QUEST) in his address appreciated the strenuous efforts made by the event committee, particularly the organizer of the event, Prof. Dr. Abdul Sattar Saand, Chairman of the Department of Electrical Engineering, QUEST.

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US moves to regulate artificial intelligence, signs order

Contd from page 1

of his strategy is to slow China's advances. He specifically referred to new regulations — bolstered two weeks ago — to deny Beijing access to the most powerful computer chips needed to produce so-called large language models, the mass of information on which artificial intelligence systems are trained.

While businesses often chafe at new federal regulation, executives at companies like Microsoft, Google, OpenAI and Meta have all said that they fully expect the United States to regulate the technology — and some executives, surprisingly, have seemed a bit relieved. Companies say they are worried about corporate liability if the more powerful systems they use are abused. And they are hoping that putting a government imprimatur on some of their A.I.-based products may alleviate concerns among consumers.

The chief executives of Microsoft, Google, OpenAI and another A.I. start-up, Anthropic, met with Ms. Harris in May, and in July they and three other companies voluntarily committed to safety and security testing of their systems.

"We like the focus on innovation, the steps the U.S. government is taking to build an A.I. work force and the capability for smaller businesses to get the compute power they need to develop their own models," Robert L. Strayer, an executive vice president at the Information Technology Industry Council, a trade group that represents large technology companies, said on Monday.

At the same time, several companies have warned against mandates for federal agencies to step up policing anticompetitive conduct and consumer harms. The U.S. Chamber of Commerce raised concerns on Monday about new directives on consumer protection, saying that the

Federal Trade Commission and the Consumer Financial Protection Bureau "should not view this as a license to do as they please."

The executive order's security mandates on companies were created by invoking a Korean War-era law, the Defense Production Act, which the federal government uses in what Mr. Biden called "the most urgent moments." The order requires that companies deploying the most advanced A.I. tools test their systems to ensure they cannot be used to produce biological or nuclear weapons. The companies must report their findings from those tests to the federal government — though the findings do not have to be made public.

The order also requires that cloud service providers report foreign customers to the federal government. It also recommends the watermarking of photos, videos and audio developed by A.I. tools. Watermarking helps track down the origin of content online and is used to fight deep fakes and manipulated images and text used to spread disinformation.

Mr. Biden, trying to make watermarking sound useful to Americans, said, "When your loved ones hear your voice on a phone, they'll know it's really you."

Many of the directives in the order will be difficult to carry out, said Sarah Kreps, a professor at the Tech Policy Institute at Cornell University. It calls for the rapid hiring of A.I. experts in government, but federal agencies will be challenged to match salaries offered in the private sector. The order urges privacy legislation, though more than a dozen bills have stalled in the divided Congress, she said.

"It's calling for a lot of action that's not likely to receive a response," Ms. Kreps said. — ERMD/NYTimes

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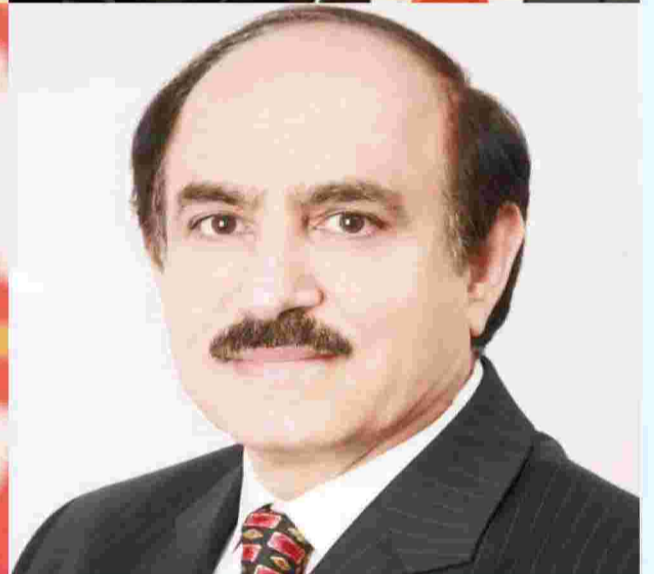
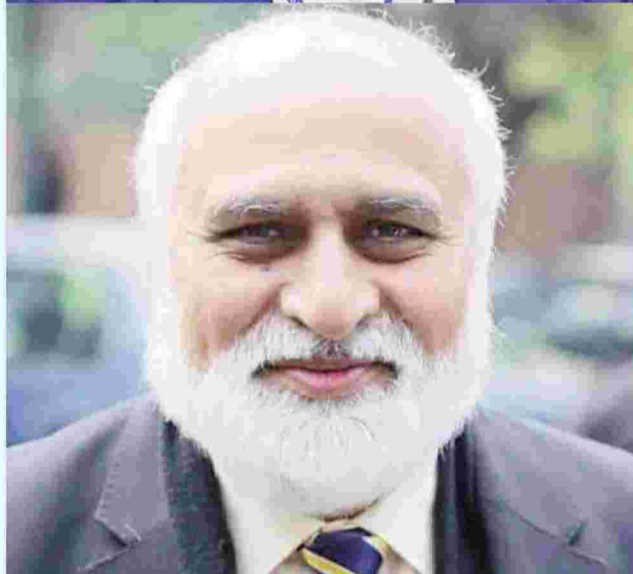
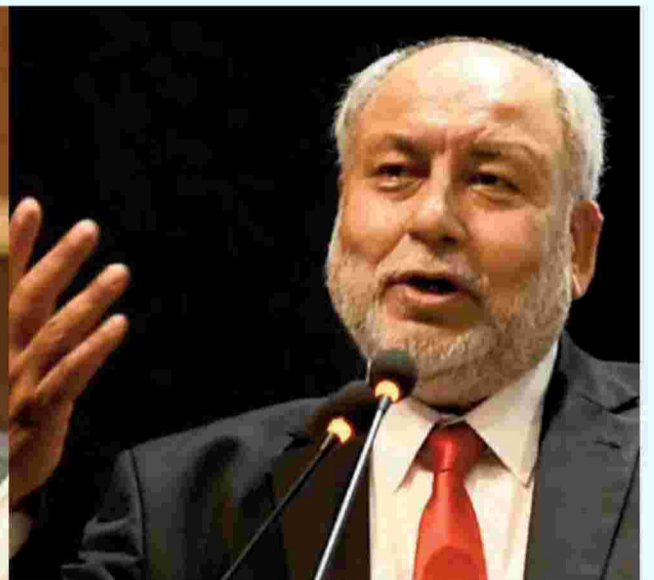
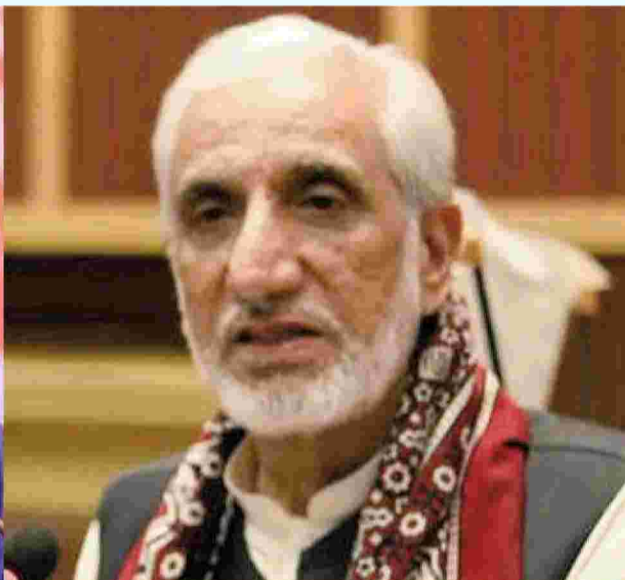
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PEC Elections 2024

Emerging alignments, fault lines



By **Manzoor Shaikh**

Each and every sitting be it a formal or informal, engineers across Pakistan has one topic in common.

Who will be the next chairman of Pakistan Engineering Council? Why should not this query be at the epicentre of engineers communication when the PEC Elections 2024 is just at the corner and all engineers' groups have kicked off internal discussions focusing the elections.

Initial information gathered by ER suggests incumbent chairman, Engr. Najeem Haroon supported by National Engineers—an alliance of National Engineers Welfare Organization, a section of contractors and a section of PEG, the organization Engr. Haroon once led—has decided to contest for the second term. 'He would love to be nominated and supported by his allies, engineers close to him say. But would he be able to retain that support is not clear. Because, a section of engineers from his allies and close to NEWA chief wishes Engr. Abdul Qadir

Shah to be the next chairman. Wishes apart, the interesting part is that not everyone in Engr. Shah's group wants him to contest the office of the chairman.

Shah's own group has another name too—Engr. Zahid Arif—which is in circulation for the office of chairman. Engr. Arif, a senior engineer hailing from KP and the one who merged his organization with Shah's is now a divulged-candidate for the top post.

But Engr. Arif is not the last name on the list. Yet another senior engineer from Punjab, and running the office in the province, Engr. Niaz Akhtar is said to be set at mind to contest for the post of the chairman. In sum, there are four candidates for the post from the alliance ruling at the moment.

Apart from National Engineers and the allies, engineers from Engr. Jawed Salim Qureshi's camp has only one name in the sight—Engr. Qureshi. He has been active in recent months as the polls are drawing closer and thus has reorganized his camp—the Engineers Pakistan. Though

his candidate in PEC Election 2021 did not fare well but he is said to have retained the amount of support mostly surrounded to him. Some engineers still mark him as a potential candidate for the forthcoming elections.

Besides National Engineers and the Engineers Pakistan, Engr. Waseem Nazir's PEG is the third significant camp in the engineering community in Pakistan. Engr. Nazir attracted majority votes in Pakistan's largest province of Pakistan but failed to win the majority for the office of the chairman. Engr. Nazir's companions say he has also kicked off his group's preparations for the campaign. Although, he has not announced for his candidature as yet but he is conceived to be the candidate for the top slot.

Among all three, PEG and the Engineers Pakistan have a kind of central command in terms of taking swift decisions for their candidates whereas the National Engineers is likely to undergo tougher bargains for picking up a consensus candidate. 'In the process the alliance may go for

another alignment too', some engineers say.

Engr. Haroon's aides argue he has run the council with a level of success and has taken care of his allies and engineers as a whole and thus he deserves to be picked up for the second term. But how Engr. Shah who had decided to contest for the top post much earlier and communicated to Engr. Najeem Haroon would be convinced to be step back is something to be seen in the coming months.

Yet another interesting development to be seen would be the move of Engr. Zahid Arif's supporters of whom some are as close to Shah as they are to Engr. Arif.

Not only that, but Engr. Niaz Akhtar's candidature, if he is adamant to go along is the decision that he has not announced formally would be affecting alignments especially in Punjab which is the real battle group in the next elections. Engr. Akhtar had advantage of his deep relations in academia in Puniab, quite connected with engineering academicians in all four provinces in Pakistan. ■

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The SBTi approves Pakistan Cables science-based emissions reduction target

Pakistan Cables, the pioneer wire and cable manufacturer in Pakistan, has become the country's first building material company to have its science-based emission reduction targets validated and approved by SBTi. The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets.

"We plan to drive sustainability by investing in continuous process improvement and cleaner energy to reach our targets by 2030," said Fahd K. Chinoy, CEO at Pakistan Cables. "By setting science-based targets, Pakistan Cables is accelerating its efforts to align with ongoing global efforts to reduce global warming".

The Company's science-based emission reduction targets are part of its long-term vision to develop its net zero strategy and is actively working to establish long-term science-based net zero targets that are aligned with SBTi's net zero criterion.

Earlier in 2021, Pakistan Cables became one of the 26 Pakistani companies and the only building materials company that signed the pledge for Business Ambition 1.50C

ahead of COP26. To date, the Company has planted approximately 50,000 trees at the Pakistan Cables Urban Forest location in Nooriabad factory, which is the country's first and largest Miyawaki based Urban Forest on an industrial estate.

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The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets. The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World-Wide Fund for Nature (WWF).

1st Two-day National Student Symposium at QUEST Nawabshah

Contd from page 1

He appreciated the scholars who presented their research projects and encouraged them to be more active in research and development.

Also, the chief guest of the event, Professor Dr. Muhammad Aslam Uqaili (The Former Vice Chancellor

tions, symposium organizer, coordinator, and those who made efforts to make the event successful.

Prof. Dr. Abdul Sattar Saand, the organizer of the symposium, thanked the audience, guests, moderators, presenters, keynote speakers and others for making the event even far more beautiful.

ties.

For the last couple of years, we have been making every possible effort to bring this kind of informative and enjoyable event for our students, and luckily our students are now increasingly publishing their research projects in the renowned academic impact factor journals



Mehran University of Engineering Technology, and Chair IEEE Jamshoor Centre) addressed the event emphasizing that the network was a must for research. "I believe in the collaborative research contributions of our emerging scholars," he said.

At the end of this session, shields were awarded to guests, keynote speakers, moderators of the presenta-

ful. students/Prof. Dr. Abdul Sattar Saand, who also briefed the media, said the main purpose of the event was to encourage students, particularly those in the final year of their studies. They must know the world of scientific knowledge. He divulged that more than 65 students' papers were presented by various universi-

of the world.

He associated this publication achievement of the students with this event, and he labeled the event 'a force to be reckoned with.'

Rameez Mahesar, the coordinator of the event, informed the moot about the presentations which would be published in the journal after a peer-review process. ■

Bijli Ghar

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- Nelson Mandela

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Construction Solutions Resources brings Global Network of SSJL to Pakistan

Key players in Pakistan's construction industry gathered to witness the introduction of the NMB Splice Sleeve System, a groundbreaking technology set to reshape the country's approach to construction projects.

Pearl Continental on Oct 25, 2023, featured esteemed speakers and experts who shed light on the NMB system's transformative potential.

System Manufacturers. He said that The NMB Splice Sleeve System, originating from Japan, has earned international acclaim for its excellence and efficiency. It

with a warm welcome emphasizing the importance of innovation and adaptation in a constantly evolving economic landscape. The need for such innovation was

encouraged the product and endorsed compliance of the technology as the Pakistan Engineering Council (PEC) approved the Building Code of Pakistan – 2021.



witness the introduction of the NMB Splice Sleeve System, a

groundbreaking technology set to reshape the country's approach to construction projects. The Construction Solutions Resources (CSR) launching event, held at

AJ Atsuhiko Ishikawa, the Executive Vice President at NMB Splice Sleeve North America, attended the event on behalf of NMB Splice

offers seismic resistance and fatigue performance, making it a game-changer in the construction landscape. The event kicked off

underscored by Dr. Sarosh Lodi, the Vice Chancellor of NEDUET, a renowned figure in civil engineering and seismic resilience. He

The success story of the NMB Splice Sleeve System implementation in Pakistan was shared by the team

Contd on page 10

NED set to address local challenges for technology-driven climate actions

NED University of Engineering and Technology, Pakistan and University of West of Scotland, UK announced working jointly to develop technological solutions for monitoring and

monitoring through digital sensors is a relatively cost-effective solution and scalable to micro and macro levels. Moreover, it enables us to develop specialized sensors to meet the requirements of any application. Currently, the research team from NED and UWS is working on expanding their sensor network to collect data from different locations. The

ment activities, the team is thriving for active stakeholder engagement to address this important issue. The focal person from NED University says that strong collaborations are essential to properly address this important issue. All stakeholders from industry, academia, research organizations, professional bodies, and policymakers should join hands to

vation for Sustainable Futures at UWS, arranging several technical talks, workshops, and trainings both in UK and Pakistan, arranging focus group meetings with academic fraternity, industry professionals, government, and professional bodies.

One such meeting was arranged in collaboration with the Institute of Engineers Pak-



predictions related to climate change in Pakistan.

The project emerged from "Going Global Partnership PAK-UK Education Gateway Mobility Partnership for Faculty" supported by the British Council and Higher Education Commission, Pakistan. The mobility partnership enabled the researchers from both participating universities to visit each other to strengthen their research collaboration in the area of climate change.

The researchers from NED University and the University of West of Scotland (UWS) informed the participants that they are working on developing specialized Internet of Things (IoT) based sensors for monitoring climate changes and collecting the data for forecasting and predictions of potential anomalies. They have already launched a joint dashboard to collectively monitor the climate data coming through the sensor nodes placed at NED University and UWS. The focal person from NED University said that climate

focal person from UWS mentioned the importance of availability of accurate data to properly address the challenges associated with climate change. As Pakistan has been



severely affected by climate change, data-driven policies and practices need to be adopted to minimize the impact.

In addition to the research and develop-

identify and actively tackle the local challenges in this area. We have initiated several activities to increase stakeholder involvement and to create public awareness of the issue.

These activities include arranging an international conference on Technology Driven Climate Actions at NED University, arranging a symposium on Digital Connectivity & Inno-

istan (IEP) in its Karachi office on 23rd October 2023. The meeting was attended by the executive committee of IEP, the research team from NED University, researchers from UWS, industrial collaborators from the UK, and representatives from local industry including the representatives from Pakistan petroleum Limited (PPL), Engro, K-Electric, Ashrae, Pakistan Plumbing Association etc. The focus of the meeting was to discuss strategies for effective collaboration and bridging the gap between industry and academia to foster the research culture for societal impact. Trust-building between different stakeholders is essential to combining expertise from different areas to identify the challenges faced by the local industry. Implementation of policies related to data security and privacy will be essential to sustain such collaborations. During the meeting it was decided to start with micro-level solutions and gradually scale up to macro level. -- PR

MUET, IEEE SIGHT, IEEE Asia Pacific Region 10 collaboration Building sustainable communities and empowering action against climate change

Introduction: MUET, in conjunction with IEEE SIGHT (Special Interest Group on Humanitarian Technology) Karachi

against Climate Change.”

This collaborative initiative involved EU Erasmus Plus ACTIVE program, QSIMPACT Pakistan, and IEEE MUET Chapter, coinciding with the celebration of EU Erasmus Day.

Prof. Dr. Muhammad Aslam Uqaili, former VC MUET, as the Chief Guest for the Erasmus Day celebration event.

The Vice Chancellor Professor DR. Tauha Hussain, applauded the collective efforts and

tal consciousness and sustainable development within the academic community and beyond. Furthermore, in recognition of the participants’ dedicated contributions and valuable insights shared during the event, the Vice Chancellor



Section and with the backing of IEEE Asia Pacific Region 10, orchestrated an event titled “Building Sustainable Communities and Empowering Action

The event featured distinguished guests, including Vice Chancellor Prof. Dr. Tauha Hussain Ali as the Chief Guest for the “Building Sustainable Communities and Empowering Action against Climate Change” segment and

honored the participants with tokens of appreciation. A panel of esteemed speakers addressed pertinent topics during the gathering. Prof. Prakash Lohana shed light on “Empowering Women for Sustainable Climate Resilience,” while Ms. Bathe Eden emphasized the role of QS ImpACT Pakistan in empowering youth to contribute positively to their communities, aligned with the United Nations 17 Sustainable Development Goals. Furthermore, Prof. Dr. Bhawani Shankar Chowdhry delved into the “ICT-Based Application for Sustainable Environmental Protection,” and Prof. Dr. Tanveer Hussain focused on “Climate Crises in Pakistan.” The discussions also encompassed Prof. Dr. Sheeraz Ahmed Memon’s insights on “AI and ICT Game Changers for Environmental Challenges,” Engr Zakir Sheikh and Ms. Aisha’s discourse on sustainable Development goals and Engr. Najeeb’s presentation on “Climate Change and Sustainable Processes for Carbon Reduction” from an Italian university

personally honored each participant with tokens of appreciation. These tokens symbolized the university’s gratitude for the commitment and active engagement demonstrated by the attendees in addressing pressing environmental challenges. The act of honoring the participants not only underscored the importance of their involvement but also served as an encouragement for continued dedication to sustainable initiatives and advocacy for climate resilience.

Prof. Dr. Muhammad Aslam Uqaili (Former Vice Chancellor MUET): Professor Aslam Uqaili’s speech centered on carbon reduction strategies and climate change initiatives, drawing from an Italian university’s perspective. He emphasized the implementation of effective carbon emission reduction methods and sustainable practices within the university context. The significance of educational institutions in leading environmental stewardship through research, education, and practical application of sustainable technologies was a key highlight.



perspective. The overarching objectives of the event were to foster a unified approach towards environmental consciousness and its intersection with community welfare, aiming to: Enhance awareness regarding the impact of climate change on both the environment and communities. Provide comprehensive educational and training opportunities for volunteers, enabling them to actively participate in sustainable initiatives.

Prof. Dr. Tauha Hussain Ali acknowledged collective efforts of all participants in contributing to the discourse on building sustainable communities and combating climate change. His speech highlighted the significance of such initiatives in fostering a culture of environmen-

Additionally, the Vice Chancellor expressed gratitude to the participants for their valuable contributions and dedication, presenting them with tokens of appreciation, symbolizing the university’s acknowledgment of their commitment to addressing pressing environmental challenges and promoting sustainability. This gesture served as both recognition for their involvement and encouragement for continued efforts in fostering climate resilience.

Every speaker collectively provided a comprehensive understanding of various perspectives and approaches to address climate change challenges, emphasizing the critical role of empowerment, technology, and collaborative efforts in building sustainable communities.

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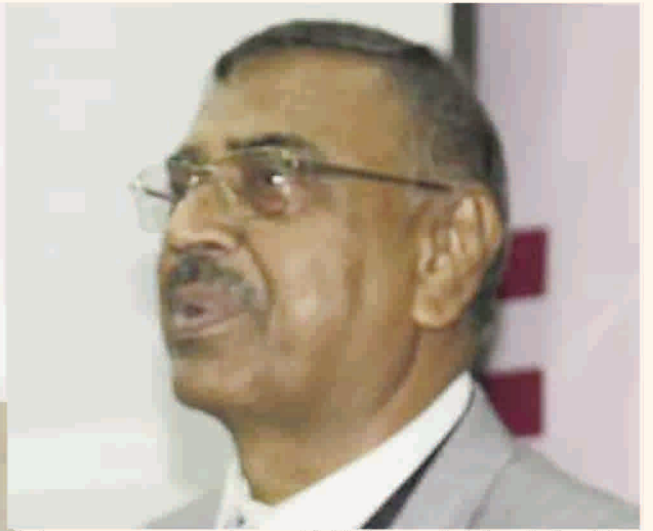
Prof. Prakash Lohana (Chair IEEE SIGHT Karachi) emphasized the need to empower women in the context of climate change resilience. His speech focused on the pivotal role women play in building sustainable communities and the importance of their active participation in climate adaptation and mitigation efforts. He highlighted successful case studies where women-led initiatives had a profound impact on local environmental sustainability.

Ms. Beth Eden (CEO QS ImpACT) highlighted the critical role of QS ImpACT, emphasizing how this platform serves as a catalyst for empowering youth to contribute positively to their communities. Her speech delved into the practical applications of the platform in fostering community engagement and aligning youth initiatives with the United Nations' 17 Sustainable Development Goals. She provided insights into how young people can become agents of change and contribute to sustainable development on a global scale.

Prof. Dr. Bhawani Shankar Chowdhry (Chair IEEE Karachi section) focused on the integration of ICT-based applications for environmental protection. Prof. Chowdhry shed light on how technological advancements could be harnessed to address pressing envi-



ronmental challenges. His speech highlighted the importance of educational institutions in leading by example and fostering a culture of environmental responsibility through research, education, and practi-



cal applications of sustainable technologies. Moreover, Prof. Dr. Sheeraz Ahmed Memon explored the transformative potential of AI and ICT in addressing pressing environmental challenges. And Engr. Aisha Research Assistant NCRA_CMS_LAB who was an Event Co-Organizer delivered a captivating talk QS ImpACT Achievement and Future Work Related to SDG'S achievements and future initiatives related to Sustainable Development Goals (SDGs).



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between sustainable development and climate resilience. Participants lauded the diverse array of keynote speakers, highlighting their thought-provoking presentations that offered innovative solutions and practical approaches to address pressing environmental challenges. Moreover, discussions and initiatives undertaken during this event have illuminated the critical role of local communities in fostering sustainable practices and fostering resilience in the face of environmental upheavals. By emphasizing the significance of collaborative efforts among various stakeholders, including policymakers, businesses, NGOs, and grassroots organizations, the event has reinforced the idea that addressing climate change necessitates a holistic and inclusive approach. From promoting renewable energy adoption to advocating for sustainable urban planning, the event has effectively highlighted the interconnectedness between environmental preservation, social equity, and economic development.

Moreover, the event's emphasis on education and awareness-raising campaigns has illuminated the path towards fostering a more environmentally conscious global citizenry. By empowering individuals with knowledge and tools to make informed decisions, the event has sowed the seeds for a sustainable mindset that can drive long-term behavioral change and inspire innovative solutions to climate-related challenges. As the event concludes, it is evident that building sustainable communities and combating climate change are not isolated endeav-



ronmental challenges. He discussed the implementation of innovative digital solutions, emphasizing the role of technology in monitoring, managing, and mitigating environmental degradation and promoting sustainability at various levels. Prof. Dr. Tanveer Hussain centered his discussion on the specific challenges and implications of climate change within the context of Pakistan. He highlighted the urgent need for tailored strategies and policies to address the unique environmental issues faced by the country. His speech covered the impact of climate change on Pakistan's ecosystems, communities, and economy, offering insights into potential solutions and adaptive measures to ensure sustainable development despite these challenges.

Engr. Najeebullah Channa (PHD Scholar

Moreover, Prof. Dr. Sheeraz Ahmed Memon explored the transformative potential of AI and ICT in addressing pressing environmental challenges. And Engr. Aisha Research Assistant NCRA_CMS_LAB who was an Event Co-Organizer delivered a captivating talk QS ImpACT Achievement and Future Work Related to SDG'S achievements and future initiatives related to Sustainable Development Goals (SDGs). Muhammad Aslam Uqaili and Muhammad Zakir Sheikh (President QS ImpACT Pakistan) revolved around the accomplishments of QS ImpACT in Pakistan and its future endeavors related to the Sustainable Development Goals. They discussed the specific initiatives undertaken by QS ImpACT Pakistan to promote sustainable development and community engagement. Additionally, they highlighted the collaborative efforts and partnerships aimed at fostering a culture of sustainability and responsible citizenship among diverse stakeholders, including the youth, local communities, and educational institutions.

Targeted audience reached: As the targeted audience was around 150, comprehensively the volunteers managed to gain an overwhelming response from the audience there were around 160 participants who attended the event.

Reviews of the participants: Following the conclusion of the event, an overwhelming wave of positive reviews emerged from the participants. Enthusiastic commendations underscored the event's comprehensive and insightful discussions, which provided a holistic understanding of the interconnectedness

of the event. The overall sentiment conveyed a collective appreciation for the event's role in inspiring action and fostering a renewed commitment to driving positive change within communities, reinforcing the participants' shared dedication to combating climate change and promoting sustainable practices.

Conclusion: The event has successfully underscored the urgent need for collective and decisive action to combat the multifaceted challenges posed by climate change. The dis-

ussions but integral components of a shared global responsibility. The commitment and enthusiasm exhibited by participants reflect a collective determination to create a more resilient, equitable, and environmentally conscious world for present and future generations. While significant challenges lie ahead, the event has laid a solid foundation for continued collaboration and action, underscoring the imperative to sustain the momentum and translate discussions into tangible, measurable results. ■



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Integrating practices for Intermittent Renewable Energy Sources

Engr. Dr. Muhammad Nawaz Iqbal

Energy demand management describes financial incentives, such as increased rates during peak hours, to modify electricity use. Users may be encouraged to modify their behavior to take advantage of cheap power periods and avoid more expensive and inconvenient power periods by real-time variable electrici-



ty pricing. Some loads, such as industrial refrigeration systems, electric boilers, and desalination facilities, have the capacity to store their output (water and heat). Several papers also came to the conclusion that increased Bitcoin mining activity would hasten the transition to sustainable energy by reducing curtailments, hedging electricity price risk, stabilizing the grid, and increasing the profitability of renewable energy power plants. Others, though, contend that Bitcoin mining is never going to be profitable.

Some hydroelectric or gas power plants are partially loaded before being regulated to adjust for variations in demand or to quickly replace lost generation. Response is the capacity to adapt as demand changes. Spinning reserve is the ability to swiftly replace a lost generation, often within a timeframe of 30 seconds to 30 minutes. In general, peaking thermal plants will operate at a lower efficiency than base load facilities. Storage-capable hydroelectric facilities, like the conventional dam structure, can be used as base load or peaking plants. Pumped capacity The most widely utilized technology today, hydropower, may significantly boost the profitability of wind power. From grid to grid, different hydropower sources suited for storage will be more or less accessible. 80% round trip efficiency is typical.

The production from a single wind turbine might vary greatly. As long as the connection between each turbine's output is poor, which it always is because of the distance between each one, combining any greater number of turbines (for instance, in a wind farm) results in lesser statistical variation. Similar to this, far-flung wind farms or turbines have smaller correlations, which lowers overall variability. There is a limit to the usefulness of this geographic diversity for any power system because wind power is dependent on weather systems. In comparison to smaller installations, power produced by multiple wind farms gridded together over a large geographic region is more consistent and has less unpredictability. Weather forecasts can be used to predict wind



output to some extent, especially when there are several turbines or farms involved. As data is gathered, particularly from more recent installations, it is anticipated that the capacity to predict wind output will improve with time. Solar energy's ability to produce electricity tends to balance out wind energy's erratic output. Typically, the windiest times of day are at night and during dark or stormy conditions, whereas the sunnier days have less wind and more sunshine. Additionally, while solar and wind energy typically peak in the summer and winter, respectively, the combination of the two decreases the requirement for dispatchable backup power. When industries like transportation, heating, and gas are connected to the power system, demand and generation may be more effectively matched. For example, the market for electric vehicles is predicted to grow to be the largest supplier of storage capacity. In comparison to other sources of flexibility, this one may be more expensive and suitable for large penetration of variable renewable energy. According to the International Energy Agency, sector coupling is required to make up for the imbalance between seasonal supply and demand.

Heat that has been stored can be used to generate energy or used directly for heating. A functional heat storage can work as an electrical storage in the context of a CHP plant at comparatively cheap prices. air conditioning for ice Ice may be kept frozen throughout the year and used to provide air cooling when it's needed most. The systems in use today only require short-term ice storage and are well developed. Due to imperfect efficiency in both storage and retrieval, some electrical energy is wasted during storage. Investment in capital as well as room for storage facilities are also necessary for storage. ■

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A LESSON FOR B2B SALES (SPECIALLY FOR YOUNG SALES ENGINEERS)

CHRISTOPHER COLUMBUS

Muhammad Tariq Haq | ESL

Almost twenty five years ago, it was a cool December morning! The winter had just started in Karachi and the people had gathered after the prayers around the prayer leader. He was delivering his short speech which he had been doing since many years! He recited the following verse

36:82 Yaseen

"Whenever He (God) wills a thing, He just commands it "Be" and it is".

But then he quickly added that: Yet God doesn't do things often in this fashion! He takes time! He created heaven and the earth and all that is within in six days! He revealed 6236 holy verses in twenty three years bit by bit; verse by verse; chapter by chapter; occasion by occasion!

He follows this because He loves to PLAN and then DO according to the PLAN! He is the BEST PLANNER!

One of the wisest Muslim rulers said "For your worldly affairs, construct your plans based on the assumption that you will live forever, and as for the life after death, create your programs based on the belief that you will die tomorrow."

It is thus inappropriate to do a haphazard job and assume that God will straighten out the mess because "He is kind," and you are a "good man." No, the plan of every successful man demonstrates the extent of physical work, talent, leadership, and vision that they exercise in all their undertakings.

Salesmen are the movers and shakers of the world! They discover needs and then the translates them into realities! Planning for them is of utmost importance!

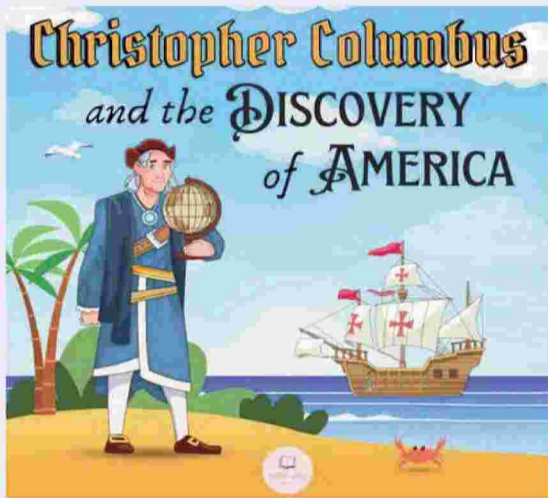
Many salespeople are like Christopher Columbus! When Columbus left seeking a route to India, he didn't know where he was going; when he reached America, he didn't know where he had reached and when he returned to Spain, he didn't know where he had been!

Similarly many salespeople set off in the morning with only a vague idea of where they are going. When they arrive at the customer's place, they don't know what exactly has brought them there. And when they arrive back at the office, they are not sure where they have been or what they have accomplished. Columbus was very lucky; most salespeople are not quite so.

Top salespeople are different. They think through their sales calls in advance.

They go over what they are going to say mentally before they get face-to-face with the prospect. They practice "mental rehearsal," a peak-performance technique used by all top athletes. A professional athlete always warms up before going onto the field. By the same token, professional salespeople warm up as well by mentally rehearsing so that they can perform at their very best when they get face-to-face with their customer.

In the next session, we will discuss why CHRISTOPHER COLUMBUS succeeded even without a plan!



Senior engineers vet Engr. Syed Abdul Qadir Shah for PEC elections

By Engr. Abdul Rehman Shaikh

A select gathering was organized by Engr. Shahnawaz Nahiyoon to honor Engr. Syed Abdul Qadir Shah, Chairman of the National Engineers Association (NEA).

The event brought together engineers from various fields, including CEOs, Chief Engineers, GMs, and directors from public and private organizations. The purpose of the gathering was to acknowledge the contributions of Engr. Syed Abdul Qadir Shah and discuss the work of the NEA.

The meeting included Engr. Syed Abdul Qadir Shah, Chairman, National Engineers Association, Engr. Shahnawaz Nahiyoon – the organizer of the event, Engr.

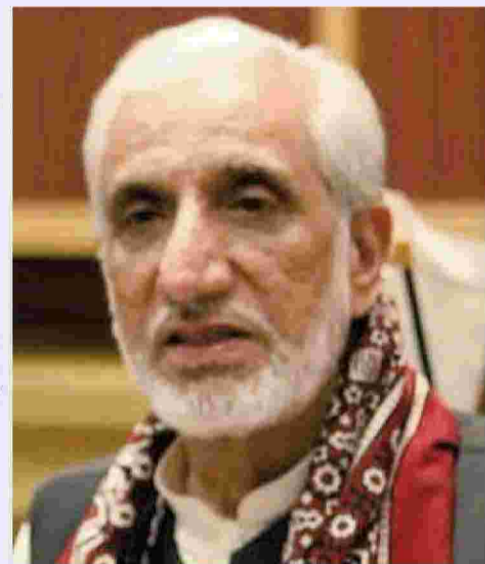
Abdul Rehman Shaikh, General Secretary, NEA, Engr. Mohsin Ail Khan, Engr. A. Majid Malik, Engr. Abid Shah Bukhari, Engr. Cap. Waqar Hussain and others. Syed Abdul Qadir Shah briefed the moot on activities

of the gathering was to make a comparative analysis of the performance of the Pakistan Engineering Council (PEC) during different tenures.

Participants shared their perspectives and experiences related to the PEC's functioning and appreciated the work carried out under the chairmanship of Engr. Syed Abdul Qadir Shah. His efforts were commended for the advancement of the engineering sector.

Some participants requested him to contest for the office of Chairman of the council in the upcoming election.

Also, They highlighted his track record, commitment, and vision for the engineering community, expressing their belief that his continued involvement would further strengthen the PEC's role and effectiveness. ■



of National Engineers Association (NEA). He highlighted the association's goals, achievements, and ongoing initiatives aimed for promoting the engineering profession in the country.

One of the focal points

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Product improvements, upcoming projects IIL invites key professionals, stakeholders from construction sector

International Industries Limited, a leading

tor. The event was aimed to foster collaboration and knowledge exchange within

the QA Technical team provided in-depth knowledge during their respective presentations.

for fruitful insights and constructive discussions. About IIL International Industries Limited (IIL) is a



player in the construction industry, hosted a highly successful event

the construction segment. IIL's institutional sales team extended invitations to over 30 industry professionals,

One of the highlights of the event was an engaging Q&A session, where participants had the opportunity to

world-class manufacturer of steel & polymer pipes, tubes and fittings. IIL has a strong focus on innovation, quality,



at a Local Hotel on October 12th, bringing together key professionals and stakeholders from the construction and building sec-

including consultants and prominent builders.

The event featured distinguished speakers who shared valuable insights into the industry. Additionally,

discuss product improvements, and upcoming projects, and engage in a general discourse about the construction industry. This interactive session provided a platform

and sustainability. With exports to more than 60+ countries, IIL is proud to be the market leader in Pakistan and a notable player in the global market. ■

Construction Solutions Resources brings Global Network of SSJL to Pakistan

Contd from page 5

responsible for the Rafi Cricket Stadium in Bahria Town, Karachi. During the presentation, Ahsan Nadeem, who was serving as the senior structural engineer and design consultant at Mushtaq & Bilal at the time, demonstrated the real-world application of this system in Pakistan. He emphasized that this technology has successfully revolutionized construction practices in regions with similar economic and geographical conditions.

Paragon Constructors, known for its exemplary track record in commercial property development, project management, and civil engineering, also shared their experience of working with NMB Splice System in Rafi Stadium Project. Mr. Shahzad Noor, the project manager of Rafi Stadium, discussed how the NMB Splice Sleeve System was employed in the Rafi Stadium project and its potential in the local construction industry.

Aftab Siddiqui, Chairman of Paragon Construc-

tors, provided a unique contractor's perspective. He spoke about the challenges and opportunities that come with adopting this innovative technology. He further recognized the efforts of Mr. Amir ul Islam, CEO of Construction Solutions Resources (CSR), for his unwavering commitment to bringing the NMB Splice Sleeve System to Pakistan. Amir shared his insights, experiences, and vision for this groundbreaking technology based on his 35 years of experience of use in the United States, regarding the adaptation as critical to pave the way for timely, scheduled and seismic-resistant construction projects in Pakistan. Mr. Amir emphasized that the introduction of SSJL's global network played a central role in this event. SSJL, a renowned manufacturer, is recognized worldwide for its innovative construction solutions. This collaboration brings the excellence of Japanese technology to Pakistan, where the NMB Splice Sleeve System is set to make a profound impact on the local construction industry. -- PR

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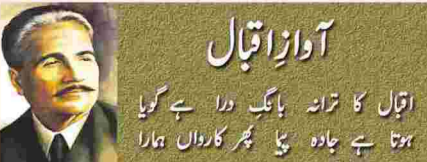
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آہ! یہ دست جو اے گلِ رنگیں نہیں کس طرح تجھ کو یہ سمجھاؤں کہ میں گل چیں نہیں کام مجھ کو دیدہ حکمت کے اچھیزدوں سے کیا دیدہ ہلبل سے میں کرتا ہوں نظارہ تر

تو شناسائے خراش عقدہ مشکل نہیں اے گلِ رنگیں ترے پہلو میں شاید دل نہیں زیب محفل ہے شریک شورش محفل نہیں یہ فراغت بزم ہستی میں مجھے حاصل نہیں اس چمن میں، میں سراپا سوز و ساز آرزو اور تیری زندگانی بے گداز آرزو توڑ لینا شاخ سے تجھ کو مرا آئیں نہیں یہ نظر غیر از نگاہ چشم صورت میں نہیں



پوری کوششیں کرنی چاہیے۔ جو لوگ فی الحال لاہور کی قرارداد پاکستان کے خلاف ہیں، ہمیں ان کے دل میں غیر ضروری تلخی پیدا نہیں کرنی چاہیے۔ آخر ہمیں ضرورت ہی کیا ہے؟ مجھے پورا پورا یقین ہے کہ ہمارے یہی حریف ایک نہ ایک دن محسوس کر لیں گے کہ ہندوستان کے انتہائی پیچیدہ مسئلے کا واحد اور بہترین حل قیام پاکستان ہے جس کے قیام کی نظیر پوری دنیا کی تاریخ میں نہیں ملتی۔

(جناب مسلم سٹوڈنٹس فیڈریشن-2 مارچ 194ء)



فرمانِ قائد اعظم

ایمان، اتحاد، تنظیم

آزادی اور قربانی

پس جہاں تک ممکن ہو ہمیں اپنے حریفوں کو سمجھانے کے لئے عقل اور دلیل سے کام لینا چاہیے۔ میں جانتا ہوں کہ دلیل اور عقل ہمیشہ ہی کامیاب نہیں ہوتیں لیکن ہمیں اپنی طرف سے

قصہ سرکھر ریلوے کی بحالی کا۔۔۔

سندھ کے نگران وزیر اعلیٰ جسٹس ریٹائرڈ مقبول باقر نے کراچی سرکھر ریلوے کی بحالی کا بیڑا اٹھایا۔ جسٹس مقبول باقر بیلٹ اینڈ روڈ فورم میں شرکت کے لیے نگران وزیر اعظم انوار الحق کا کڑے وفد میں شامل تھے۔ وزیر اعلیٰ نے اس موقع سے فائدہ اٹھاتے ہوئے کسی آر کے فوائد بیان کرتے ہوئے کہا کہ کراچی سرکھر ریلوے کی بحالی کا بنیادی مقصد تجارت و صنعت کو فروغ دیا ہے اور کسی آر کے ٹریکس اور اسٹیشنوں کا قیام ہی نہیں بلکہ معاشی فوائد کو کراچی سے پاکستان کے اہم شہروں تک پہنچاتا ہے۔ انھوں نے کہا کہ اگر سرکھر ریلوے بحال ہوگی تو روزانہ لاکھ سے زیادہ مسافر ان ریل گاڑیوں میں سفر کریں گے۔

نگران وزیر اعلیٰ نے فورم کے شرکاء کو بتایا کہ اس منصوبہ پر 2 بلین ڈالر کی لاگت آئے گی اور سرکھر ریلوے کی لائن 43 کلومیٹر طویل ہوگی۔ کسی آر شہر کے خاصے علاقوں سے گزرنے لگی۔ پھر یہ بھی کہا کہ سندھ کی نگران حکومت اس منصوبہ کی تعمیل کے لیے برعزم ہے۔ جب میان نواز شریف کے دور اقتدار میں سی پیک منصوبہ پر دستخط کرنے کی تقریب بیجنگ میں منعقد ہوئی تو اس وقت کے وزیر اعلیٰ مراد علی شاہ بھی وزیر اعظم کے وفد میں شامل تھے۔ انھوں نے واپسی پر کراچی آ کر اعلان کیا کہ چین کسی آر کی بحالی کے لیے تیار ہے۔ میان نواز شریف کے اس وفد میں پنجاب کے وزیر اعلیٰ پنجاب میاں شہباز شریف بھی شامل تھے، انھوں نے لاہور پہنچنے پر اعلان کیا کہ سی پیک کے منصوبہ میں لاہور کی اورنج ٹرین کی تعمیر کا منصوبہ بھی شامل کیا گیا ہے، یوں لاہور میں اورنج ٹرین کی تعمیر شروع ہوئی۔ یہ منصوبہ تکمیل کے قریب تھا کہ تحریک انصاف کی حکومت وفاق اور پنجاب میں قائم ہوئی تو منصوبہ کئی مہینوں کے لیے التواء کا شکار ہوا، مگر یہ منصوبہ مکمل ہوں۔ سندھ کے وزیر اعلیٰ مراد علی شاہ پھر تحریک انصاف کے وزیر اعظم کے ساتھ بیجنگ گئے اور واپسی پر یہ بری خبر سنائی کہ چین کو اس منصوبے میں دلچسپی نہیں رہی۔ سابق چیف جسٹس پاکستان جسٹس گلزار احمد نے کراچی ہدائت میں سماعت کے دوران ایپریس مارکیٹ سے تجاویزات کے خاتمہ کا حکم دیا۔ ان کی توجہ سے کسی آر کے التواء کے منصوبہ پر ٹوٹی۔ انھوں نے اس منصوبے کی عدم تکمیل پر سندھ حکومت کی کارکردگی پر سخت ناراضگی کا اظہار کیا۔ اس وقت کے بلدیہ کراچی کے ایڈمنسٹریٹر مرتضیٰ وہاب کو طلب کیا گیا اور یہاں احکامات جاری کیے گئے کہ سرکھر ریلوے پر قائم تجاویزات کو بلائی طور پر بنایا جائے، یہ رمضان کا مہینہ تھا۔ سرکاری مشینری نے فوری طور پر آپریشن شروع کیا۔ سرکھر ریلوے کی لائن پر سیکنڈ بسٹیاں، اسپتال اور سرکاری دفاتر حتمی کے تھانے قائم تھے۔ حکومتی حملے نے سپریم کورٹ کے طے شدہ وقت کے مطابق کام مکمل کیا۔ اس وقت کے ریلوے کے وفاقی وزیر شیخ رشید نے یہ فیصلہ صادر کیا کہ پاکستان ریلوے زبوں حالی کا شکار ہے اس بناء پر حکومت سندھ کو کسی آر کی بحالی کا فریضہ انجام دینا چاہیے۔

میاں شہباز شریف کی قیادت میں وفاق میں مختلف جماعتوں پر مشتمل مخلوط حکومت قائم ہوئی۔ مسلم لیگ ان کے احسن اقبال کو پلاننگ کی وزارت کی سربراہی سونپی گئی۔ احسن اقبال کی قیادت میں اس منصوبہ کی تکمیل کے لیے دوسری فریڈیلٹی تیار کی گئی جس پر 2.027 بلین ڈالر کا تخمینہ لگایا گیا اس فریڈیلٹی کے مطابق یہ منصوبہ 38 مہینوں میں مکمل ہونا تھا۔ احسن اقبال کی صدارت میں ہونے والے اجلاس کے شرکاء کو بتایا گیا کہ چین کی حکومت پھر اس منصوبہ میں دلچسپی لے رہی ہے اس بناء پر فریڈیلٹی تیار کرنا ضروری ہے۔ اس رپورٹ میں بتایا گیا تھا کہ سرکھر ریلوے 43.13 کلومیٹر طویل ہوگی، جس میں سے 17.74 کلومیٹر ریلوے

لائن زمین پر تعمیر ہوگی اور 25.51 کلومیٹر ایلے ویٹر پر تعمیر ہوگی۔ اس فریڈیلٹی رپورٹ میں یہ بھی کہا گیا تھا کہ پہلے کسی آر کی ملکیت وفاقی حکومت ہوگی اور پھر یہ بتدریج حکومت سندھ کو منتقل ہو جائے گی مگر یہ معاملہ محض فریڈیلٹی تک محدود ہو گیا۔ یہ خبریں بھی ذرائع ابلاغ کی زینت نہیں کہ چین کی حکومت پشاور سے کراچی کے لیے تعمیر ہونے والی نئی ریلوے لائن ایم۔ ون پرفوری طور پر سرمایہ کاری نہیں کرے گی۔ اب نگران وزیر اعظم پیپلز اینڈ روڈ فورم میں شرکت کے لیے چین کے دارالحکومت بیجنگ گئے تو پھر دونوں منصوبوں کی تجدید ہوئی۔

سرکھر ریلوے جنرل ایوب خان کے دور اقتدار میں تعمیر کی گئی، اس وقت شہر میں کئی نئی بسٹیاں آباد ہوئیں۔ S.I.T.E میں بہت سے کارخانے قائم ہوئے، یوں سرکھر ریلوے ایک نیم دائرہ کی شکل میں چلنے لگی۔ یہ سرکھر ریلوے سپیری سے کراچی آنے کے لیے کم وقت میں سب سے زیادہ مناسب سواری تھی۔ اسی طرح وزیر مشن سیماڑی سے سائٹ، ناظم آباد، لیاقت آباد، یونیورسٹی روڈ سے سی او ڈی تک کے علاقے سے ہوتی ہوئی مرکزی ریلوے سے منسلک ہو جاتی تھی۔ پھر مضافات کے علاقوں سے روزانہ علی الصبح ہزاروں مسافر آدھے گھنٹہ میں (لانڈھی اور لیمرسٹی سے) اسٹیٹیشن پہنچ جاتے تھے۔ اس وقت تمام مالیاتی ادارے سرکاری ادارے یا سکول اور دیگر کاروباری اداروں کے دفاتر میٹرو ڈا، آئی آئی چندر نگر روڈ اور اطراف کے علاقوں میں پھیلے ہوئے تھے۔ یہ مسافر سرکھر ریلوے کے ذریعے اپنے گھر وں تک آرام وہ سٹر کے ذریعے واپس پائی جاتے تھے۔ اس زمانے میں اندرون شہر میں فرام دے چلتی تھی۔

سٹی اسٹیشن سے کینٹ اسٹیشن، سولجر بازار اور چاکو ایڈا تک فرام سفر کے لیے بہترین سواری تھی مگر پیپلز پارٹی کی حکومت میں ٹرانسپورٹ ماہرین مافیہ ارتقاء پذیر ہوئی۔ بیورو کریسی نے ساری دنیا کی طرح الیکٹرک ٹرام میں تبدیلی کرنے کے بجائے اس بناء پر بند کرنے کا فیصلہ کیا کہ ٹرام کی پٹری فریک میں رکاوٹ بنتی ہے۔ خرام کی جگہ چھوٹی ملی ہوں نے لے لی جن میں مسافر فرام خرابن سفر کرنے پر مجبور ہوتے ہیں۔ سرکھر ریلوے 1984 میں بند ہوئی۔ سابق صدر پرویز مشرف کے دور میں سندھ کے گورنر عشرت العباد نے اس وقت کے وزیر اعظم شوکت عزیز کو

کراچی بلا کر سرکھر ریلوے کے افتتاح کی تقریب منعقد کی۔ یہ سرکھر ریلوے چنیس ہاٹ تک جاتی تھی مگر کچھ عرصے بعد یہ بھی بند ہو گئی، بعد ازاں شیخ رشید کے پاس ریلوے کا محکمہ آ گیا۔ انھوں نے ریلوے کے ملازمین کو صحیح پیری مارشنگ یارڈ لے جانے والی ریل گاڑی کو سرکھر ریلوے کا نام دیا مگر یہ تجربہ ناکام ہوا۔ ناقص پبلک ٹرانسپورٹ کی بناء پر 80 ع کی دہائی میں کراچی خون ریز ہنگاموں کا شکار ہوا مگر کسی حکومت نے کراچی میں جدید ماس ٹرانزٹ منصوبہ پر کام نہیں کیا۔ پیپلز پارٹی کی حکومت نے گزشتہ سال کراچی والوں پر ایک احسان کیا۔ پیپلز بس

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پاکستان، چین میں 1.5 ارب ڈالر سرمایہ کاری سمیت تعاون کے 20 سمجھوتے

سی پیک خوشحالی کا ذریعہ، انوار کا کر، ایم ایل ون، دیگر شعبوں میں مفاہمتی یادداشتوں پر دستخط

شراکت داروں سے ملکر کام کریں گے، نگران وزیر اعظم کا ہیلتھ اینڈ روڈ فورم سے خطاب، چینی ہم منصب اور دیگر سے ملاقاتیں

ترقی، خوشحالی، عوام کا معیار زندگی بلند اور روزگار کے مواقع پیدا کرنے اور عوام کو غربت سے نکلانے کا ذریعہ ہے۔ وزیر اعظم نے بی آر آئی کے فلیگ شپ منصوبے، پاک چین اقتصادی راہداری کے دس سال مکمل ہونے کا ذکر کرتے ہوئے کہا کہ اس کے تحت 25 ارب ڈالر کے 50 منصوبے مکمل کرنے گئے ہیں۔ 8 ہزار میگا واٹ سے زیادہ بجلی سٹیم میں شامل ہوتی ہے۔ پاکستان کو ریڈیو ٹرانزٹ اور ٹرانس سپینٹ کامرکز بنایا جا رہا ہے جس سے خطے کے دیگر ممالک کو بھی بہتر رسائی اور مواقع میسر آئیں گے۔ سی پیک روزگار کی فراہمی کیلئے بھی اہم راہداری ثابت ہوگا۔ انہوں نے نقل و حمل، توانائی اور ڈیجیٹل معیشت میں سرمایہ کاری کر کے ترقی پذیر دنیا میں بنیادی ڈھانچے کو خراب کرنے کی فوری ضرورت پر زور دیا۔

چینی میڈیا سے گفتگو کرتے ہوئے نگران وزیر اعظم نے ہیلتھ اینڈ روڈ اینڈ سٹریٹس کی بحران پر حتمیت کا اعادہ کرتے ہوئے کہا ہے کہ پاکستان سی پیک کے اعلیٰ معیار کی ترقی کے نئے مرحلے میں چین کے ساتھ مختلف شعبوں میں رابطے اور تعاون کو مضبوط بنانے کا، غذائی تحفظ اور زراعت جیسے شعبوں میں نئی ٹیکنالوجی متعارف کرائی جائے گی۔

پاکستان اور چین کے درمیان گوارا بندرگاہ کی ترقی کی رفتار کو تیز کرنے اور دیگر شعبوں میں تعاون کے معاہدے ہو گئے ہیں، نگران وزیر اعظم انوار الحق کا کر کے دورہ چین کے موقع پر گوارا کی تعمیر و ترقی پر مشاورتی معاہدے سمیت 20 معاہدوں اور مفاہمتی یادداشتوں پر دستخط ہوئے ہیں، جن میں سے زیادہ تر چین کی تجاویز پر مبنی ہیں۔ وزیر اعظم پاکستان سے جاری اعلیٰ سطح کے مطابق نگران وزیر اعظم انوار الحق کا کر اور چینی وزیر اعظم کی چینگ میں ”تھرڈ ہیلتھ اینڈ روڈ فورم کی سائٹ لائن پر ملاقات کی، اس موقع پر گوارا پورٹ ڈویلپمنٹ پراجیکٹ کے ٹینڈر میں پاکستان سمیت متعدد معاہدوں اور مفاہمتی یادداشتوں پر دستخط کیے گئے۔

دووں وزرائے اعظم کی موجودگی میں تجارت، مواصلات، ML-1، ٹرانسپورٹیشن، ٹیکنالوجی، فوڈ سیکورٹی اینڈ ریسرچ، میڈیا، سیٹھ، خلائی تعاون، ارب ٹین اسیل ڈیولپمنٹ کی پالیسی بلڈنگ، معدنی ترقی، صنعتی تعاون، ماحولیاتی تبدیلی اور ویکسین ڈویلپمنٹ کے شعبوں میں مفاہمتی یادداشتوں پر دستخط کیے گئے، اس موقع پر ML-1 منصوبے کی لاگت کو کم کر کے 16.7 ارب ڈالر تک لانے کیلئے منصوبے کے دائرہ کار کو محدود کرنے اور ڈیزائن تبدیل کرنے کیلئے ایک ٹیم پر بھی دستخط کیے گئے، اس کے علاوہ سی پیک فریم ورک کے اندر معدنی ترقی اور صنعتی تعاون کو مضبوط بنانے کے معاہدے پر بھی دستخط کیے گئے، معاہدے کے مطابق انسٹی ٹیوٹ آف کپری ہینڈلنگ اینڈ پورٹیشن آف نیشنل ڈویلپمنٹ اینڈ ریفرمیشن اینڈ اینڈرنگ (NDRC) اور انسٹی ٹیوٹ آف اینڈرنگ اینڈ ریفرمیشن انکوائری انکوائری انکوائری کو بندر گاہ کی تیز ترقی کے لیے مدد فراہم کرے گا، ایک سالہ ایم او یو کے تحت چین بندرگاہ کی منصوبہ بندی، بندرگاہ کی تعمیر، پورٹ آپریشن، پورٹ لاجسٹکس، پورٹ انڈسٹری اور لاجسٹکس کیلئے مدد فراہم کرے گا۔



انوار الحق کا کر نے کہا سی پیک اپنی تعمیر کے نئے دور میں داخل ہو چکا ہے جس میں صنعتی ترقی روزگار کی فراہمی کے منصوبے، معدنیات، آئی ٹی اور زراعت کی ترقی شامل ہے۔ پاکستان کے خصوصی اقتصادی زونز میں چینی کمپنیوں کی سرمایہ کاری سے پاکستان کی برآمدات میں اضافہ اور صنعتی استعداد بڑھے گی۔ وزیر اعظم کی چینگ نے پاک چین تعلقات کے فروغ اور سی پیک کی تعمیر و ترقی کی رفتار پر اطمینان کا اظہار کیا۔ پاکستان اور چین نے پٹرولیم کے شعبے میں 1 ارب 50 کروڑ ڈالر کی سرمایہ کاری سے متعلق مفاہمت کی یادداشت پر بھی دستخط کیے۔ تقریب میں نگران وزیر اعظم انوار الحق کا کر اور گراں وفاقی وزیر توانائی محمد علی مومند بھی موجود تھے۔

واضح رہے کہ گوارا بندرگاہ کو سی پیک سے گٹھ وے کے طور پر پیش کیا جاتا ہے، لیکن اس کی تعمیر و ترقی میں بہت سے مسائل کا سامنا ہے، پاکستان حال تا کوئی وولڈ کلاس انفراسٹرکچر بنا سکا ہے اور نہ ہی صنعتی زون کو آباد کر سکا ہے، یاد رہے کہ سی پیک کی پہلی بائی کے دوران

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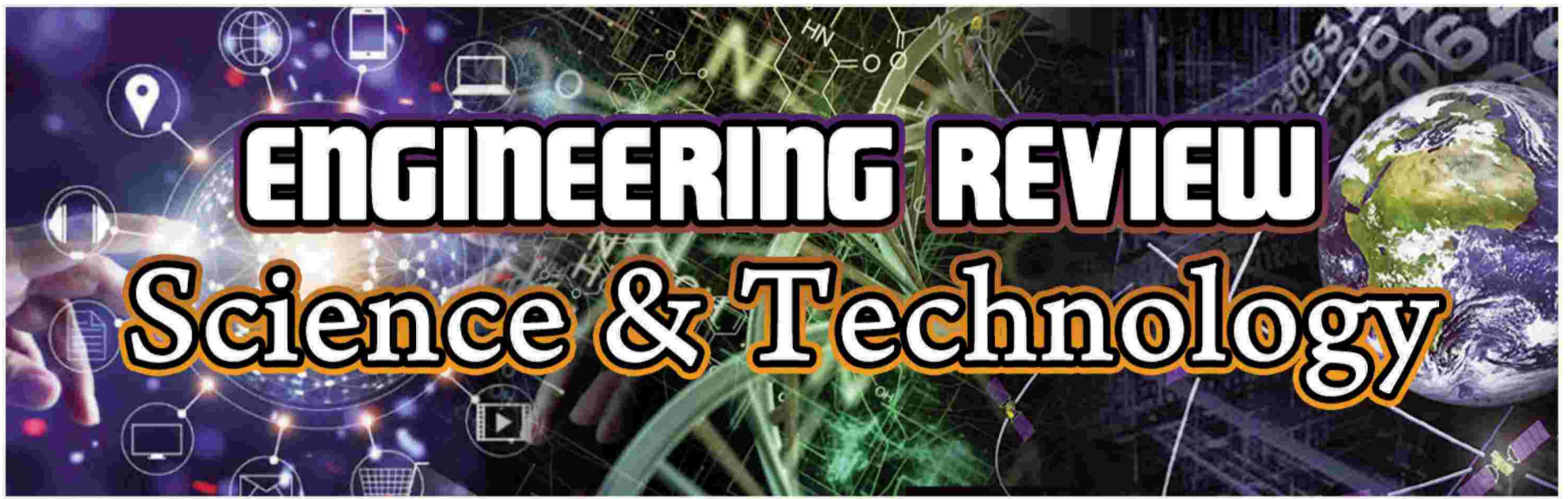
قابل تجدید قدرتی گیس کے فروغ کا ایم او یو طے پایا گیا

سوئی سدرن آلٹرنیٹ انرجی اور پاکستان مشین ٹول فیکٹری نے مفاہمتی یادداشت پر دستخط کر دیے

سوئی سدرن آلٹرنیٹ انرجی (پرائیویٹ) لمیٹڈ (SSGC-AE) اور پاکستان مشین ٹول فیکٹری (PMTF) نے قابل تجدید قدرتی گیس کے گرین مالیکولز کو کارآمد بنانے کیلئے مفاہمت کی یادداشت (ایم او یو) پر دستخط کیے، ایک اسٹریٹجک اقدام کے طور پر پاکستان مشین ٹول فیکٹری، سوئی سدرن گیس پلانٹ۔ اے ای کو ایک قابل تجدید قدرتی گیس بائیوگیس پلانٹ میں فراہم کرے گی، یہ کاوش پائیدار توانائی کے حل کے ساتھ مستقبل میں ایندھن کی فراہمی کو یقینی بنانے کی۔ سوئی سدرن گیس۔ اے ای کے چیئر مین عمران منیر اور پاکستان مشین ٹول فیکٹری کے میجر جنرل مہتاب ملک

(ریٹائرڈ) نے جمعہ 20 اکتوبر 2023 کو سوئی سدرن گیس پلانٹ کی ہیڈ آفس میں منعقدہ ایک سادہ مگر پر وقار تقریب میں مفاہمت کی یادداشت پر دستخط کیے، سوئی سدرن گیس پلانٹ (ایس ایس جی سی) کا ایک ڈی ایو اور، ایس ایس جی سی اے ای 2022 میں قائم کیا گیا تھا جس کا بنیادی مقصد ملک میں توانائی کے چیلنجز سے نبھانا تھا، کمپنی کا بنیادی مٹن متبادل توانائی کے منصوبوں پر توجہ مرکوز کرنا ہے، جس میں قابل تجدید اور ماحول دوست ایندھن کے منصوبوں جیسے بائیوگیس اور بائیو میتھین، تھرمل توانائی پر مبنی ہیں پیداوار شامل ہیں لیکن یہ صرف ان تک محدود نہیں ہے بلکہ ان میں کاربن کی پینچر اور ذخیرہ

کرنے کی صلاحیتوں کے ساتھ کولے سے گیس (سی 2 ایل) کی تبدیلی کے ساتھ ساتھ گرین ہائیڈروجن کی پیداوار جیسے دور رس اقدامات کرنا بھی شامل ہیں۔ مفاہمت نامے کا مقصد یہ ہے کہ پاکستان مشین ٹول فیکٹری فضلے کے مواد کو ٹیپ کر کے بائیوگیس/ بائیو میتھین پیدا کرے گا اور بائیوگیس پلانٹس کے ذریعے قابل تجدید قدرتی گیس پیدا کی جائے گی، یہ ماحول دوست گیس بعد میں ایس ایس جی سی۔ اے ای کی جانب سے خریداری کے لیے دستیاب کرائی جائے گی، جو اس کے بعد تیسرے فریق کے اداروں کو اس کی مقامی تقسیم کی گئی۔



Protein root discovery seals future of climate-proof plants

Researchers have discovered a protein that seals plant roots to regulate the uptake of nutrients and water from the soil, the discovery could help develop climate proof crops that require less water and chemical fertilizers.

Researchers from the University of Nottingham identified new components of the lignin barrier in plant roots and the specific function of dirigent proteins (DPs), located in the root endodermis that control water and nutrient uptake. Their findings have been published in Science Direct.

Plant roots function by absorbing mineral nutrients and water from the soil and also controlling their proper balance in the plant. This control is exerted by a specialised layer of root tissue called the endodermis.

The endodermis contains a barrier to the movement of solutes and water that is made of lignin, the same material present in wood. This impermeable barrier blocks the uncontrolled movement of material into the root, by forming a tight seal between cells. This seal ensures the only pathway for nutrients and water to be taken up by roots is through the cells of the endodermis. This allows full cellular con-

trol over what enters and leaves the plant via the roots.

This research has identified new components of the lignin deposition machinery that focus on the function of dirigent proteins (DPs), located in the root endodermis. These proteins act in coordination with other described root regulatory components to direct and organize the correct deposition of lignin in the endodermis allowing the plant to ensure it receives the optimum balance of nutrients from the soil.

Dr Gabriel Castrillo from the University of Nottingham's School of Biosciences one of the leaders of the

research, said: "With record temperatures being reached in parts of the world this year and erratic rainfall it is ever more important to understand the mechanisms of plants so we can future proof them to secure future food supplies. This research shows how plant roots regulate their uptake of water and nutrients through the deposition of lignin, which is regulated by DPs. Without these proteins, proper root sealing is not completed and the nutrient balance in the plant is compromised. We can use this knowledge to engineer plants to be able to grow with less water and chemical fertilizers." -- SD



Engineers develop breakthrough 'robot skin'

Smart, stretchable and highly sensitive, a new soft sensor developed by UBC and Honda researchers opens the door to a wide range of applications in robotics and prosthetics.

When applied to the surface of a prosthetic arm or a robotic limb, the sensor skin provides touch sensitivity and dexterity, enabling tasks that can be difficult for machines such as picking up a piece of soft fruit. The sensor is also soft to the touch, like human skin, which helps make human interactions safer and more lifelike.

"Our sensor can sense several types of forces, allowing a prosthetic or robotic arm to respond to tactile stimuli with dexterity and precision. For instance, the arm can hold fragile objects like an egg or a glass of water without crushing or dropping them," said study author Dr. Mirza Saquib Sarwar, who created the sensor as part of his PhD work in electrical and computer engineering at UBC's faculty of applied science.

Giving machines a sense

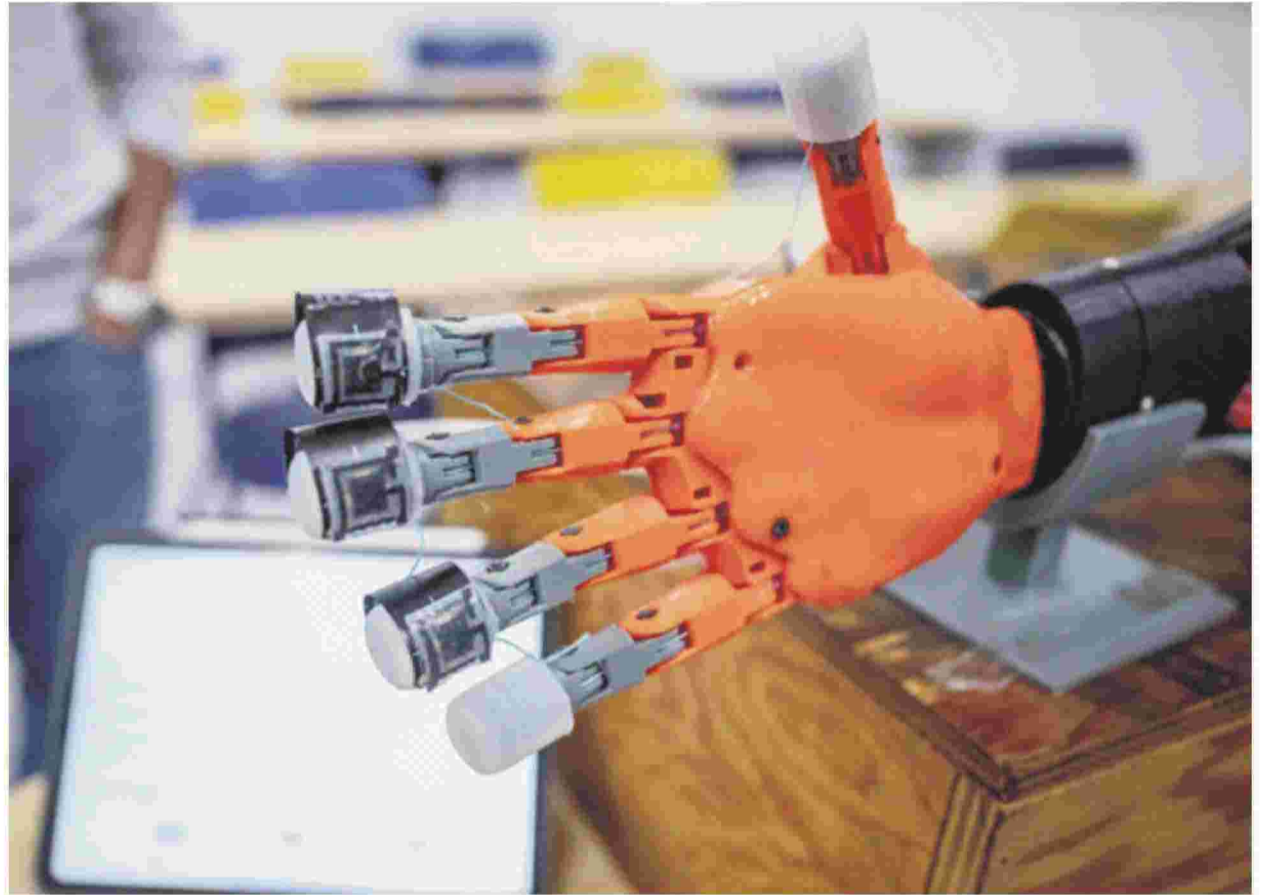
of touch

The sensor is primarily composed of silicone rubber, the same material used to make many skin special effects in movies. The team's unique design gives it the ability to buckle and wrinkle, just like human skin.

"Our sensor uses weak electric fields to sense objects, even at a distance, much as touchscreens do. But unlike touchscreens, this sensor is supple and can detect forces into and along its surface. This unique combination is key to adoption of the technology for robots that are in contact with people," explained Dr. John Madden, senior study author and a professor of electrical and computer engineering who leads the Advanced Materials and Process Engineering Laboratory (AMPEL) at UBC.

The UBC team developed the technology in collaboration with Frontier Robotics, Honda's research institute. Honda has been innovating in humanoid robotics since the 1980s, and developed the well-known ASIMO robot. It has also developed devices to assist walking, and the emerging Honda Avatar Robot.

"Dr. Madden's lab has



significant expertise in flexible sensors and we're happy to collaborate with this team in developing tactile sensors that can be applied to robots," said Mr. Ishizaki Ryusuke, one of the study's lead authors and chief engineer at Frontier Robotics.

Practical and scalable

The researchers say the new sensor is simple to fabricate, which makes it easy to scale to cover large surface areas and to manufacture large quantities.

Dr. Madden noted that sensors and intelligence are making machines more capable and lifelike, increasingly

allowing people to work and play alongside them, but much more can be achieved.

"Human skin has a hundred times more sensing points on a fingertip than our technology does, making it easier to light a match or sew. As sensors continue to evolve to be more skin-like,

and can also detect temperature and even damage, there is a need for robots to be smarter about which sensors to pay attention to and how to respond. Developments in sensors and artificial intelligence will need to go hand in hand." -- SD

Electron-rich metals make ceramics tough to crack

Researchers have discovered a way to make ceramics tougher and more resistant to cracking.

By building these materials using a blend of metal atoms possessing more electrons in their outer shell, a team led by engineers at the University of California San Diego has unlocked the potential to enable ceramics to handle higher levels of force and stress than before.

Ceramics offer many advantages due to their remarkable properties, including their ability to withstand extremely high temperatures, resist corrosion and surface wear, and maintain lightweight profiles. These properties make them suitable for a variety of applications such as aerospace components and protective coatings for engines and cutting tools. However, their weakness has always been their brittleness. They break easily under stress.

But now, researchers have found a solution that could make ceramics harder to break. They published their work recently in *Science Advances*.

The study, led by UC San Diego nanoengineering professor Kenneth Vecchio, centers on a class of ceramics known as high-entropy carbides. These materials have highly disordered atomic structures, composed of carbon atoms bonded with multiple metal elements from the fourth, fifth and sixth columns of the periodic table. These metals include titanium, niobium and tungsten, for example. The researchers found that the key to enhancing ceramic toughness lay in the use of metals from the fifth and sixth columns of the periodic table, due to their higher number of

valence electrons.

Valence electrons -- those residing in an atom's outermost shell and engaging in bonding with other atoms -- proved to be a pivotal factor. By using metals with a higher valence electron count, the researchers successfully improved the material's resistance to cracking when subjected to mechanical load and stress.

"Those extra electrons are important because they effectively make the ceramic



material more ductile, meaning it can undergo more deformation before breaking, similar to a metal," said Vecchio.

To better understand this effect, Vecchio's group collaborated with Davide Sangiovanni, a professor of theoretical physics at Linköping University, Sweden. Sangiovanni performed the computational simulations, and Vecchio's team experimentally fabricated and tested the materials.

The team investigated high-entropy carbides featuring various combinations of five metal elements. Each combination yielded a different concentration of valence electrons within the material.

They identified two high-entropy carbides that exhibited exceptional resistance to cracking under load or stress, thanks to their high valence electron concentrations. One was composed of the metals vanadium, niobium,

tantalum, molybdenum and tungsten. The other variant substituted niobium with chromium in the mix.

Under mechanical load or stress, these materials were able to deform or stretch, respectively, resembling the behavior of metals rather than the typical brittle response of ceramics. As these materials were punctured or pulled apart, bonds began to break, forming atom-sized openings. The additional

valence electrons around the metal atoms then reorganized to bridge these openings, forming new bonds between neighboring metal atoms. This mechanism preserved the material's structure around the openings, effectively inhibiting them from growing bigger and forming cracks.

"We discovered that there's this underlying transformation happening at the nanoscale where the bonds are being rearranged to hold the material together," said study co-author Kevin Kaufmann, a UC San Diego nanoengineering Ph.D. alumnus from Vecchio's lab. "Instead of just cleaving right across the fracture surface, the material slowly frays like a rope would when it is being pulled. In this way, the material can accommodate this deformation that's occurring and not fail in a brittle manner."

The challenge now lies in scaling up the production of these tough ceramics for commercial applications. That could help transform technologies that rely on high-performance ceramic materials, from aerospace components to biomedical implants.

The newfound toughness of these ceramics also paves the way for their use in extreme applications, such as leading edges for hypersonic vehicles. Tougher ceramics could serve as frontline defense for these vehicles, shielding vital components from getting impacted by debris and enabling the vehicles to better survive supersonic flights, explained Vecchio.

"By addressing a longstanding limitation of ceramics, we can greatly expand their use and create next-generation materials that hold the potential to revolutionize our society," said Vecchio. -- SD