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VISIONARY
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and A Change maker***



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and A Change maker*

Shweta Singh | The CEO Magazine

The fields of science, technology, engineering, and mathematics (STEM) have remained male-dominated, with lower participation rates for women since the origins of these fields. However, a few remarkable women have defied stereotypes and made a name for themselves, and that too at a time when many women weren't even allowed to pursue higher education. Dr. Shailaja Donempudi is one amongst them. A scientist, a mentor, and an avid believer in the power of innovation, she has dedicated her career to pushing the boundaries of research and bringing scientific advancements to life. Her journey is an inspiring blueprint for the future generations of women in STEM.



Dr. Shailaja Donempudi

Distinguished Scientist,
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Technology, GoI





The Making of a Scientist

Dr. Shailaja Donempudi's love for science was evident from an early age. While she admired her social studies teacher—so much so that she still wears her wristwatch on her right hand as her teacher did—it was her science teacher who truly nurtured her curiosity for the subject. Even as a student, her dedication stood out. In 1979, when she completed her 10th standard as a school topper,

her science teacher would borrow her well-written notes to teach the next class. Her meticulous approach, organising notes with neat subheadings in different coloured pens and drawings, reflected her deep engagement with the subject since childhood. *“Science, of course, was my most favourite subject among all the others while I was in school,”* she recalls. *“I was fascinated with the fundamentals related to life, biology and molecules and was lured to science as a subject more than others.”*

Coming from a family that valued financial independence, she was always career-orientated. She consistently topped her classes, excelling in both school and higher education. While choosing her path, she carefully considered employment opportunities. Chemistry, though tougher for her compared to botany and zoology, seemed to offer better employment opportunities. This led her to pursue a structured academic journey, and she went on to earn an M.Sc., then an M.Phil., in chemistry from a highly reputed Central University of Hyderabad (HCU), followed by a Ph.D. from Osmania University (OU).

During her postgraduate studies, she cleared the CSIR NET exam, an essential qualification for pursuing research or teaching in universities. Her father initially encouraged her to become a lecturer, considering the fact that a lecturer position is considered a stable and secure career for women. But she was drawn to the life of a scientist. When research positions opened up, she seized the opportunity. Her interest in polymer science developed during her Ph.D. studies. Unlike her peers, who focused on the physical chemistry of polymers, she chose to explore controlled-release polymer formulations for healthcare and agrochemicals. This was an uncharted area for both her and her supervisor at the CSIR-Indian Institute of Chemical Technology (IICT), where she conducted her research and received the degree from OU.

“I wanted to do something different from the seniors in the group,” she says. “All my seniors worked on the physical chemistry of polymers. But my topic was entirely different. It was new for my supervisor too. That made it a very exciting phase for both of us as we embarked on this new topic.”

During her Ph.D., she even managed to transfer one technology out of her research work. Little did she know that this was just the beginning of a lifelong commitment to innovation and meaningful scientific contributions.

Redefining the Norms

Back in 1993, Dr. Shailaja joined the Polymers and Functional Materials department as a scientist at the CSIR-IICT as the only woman in the department. But she never saw that as a challenge. She explains, *“I have*



never felt that a woman is any less. It all boils down to intellect and the kind of metrics you bring to the table. What truly matters is how you excel and pursue your work with utmost dedication.”

With an eye for detail and a refusal to settle for mediocrity, she always took on challenges head-on. Just like in her Ph.D., where she chose an unconventional research topic, she took on every project with the same determination. *“I never felt I was denied of opportunities. I must give credit to my male colleagues as well, because they never made me feel otherwise. At the same time, I never gave them an opportunity to pinpoint at my capabilities.”* For Dr. Shailaja, excellence was the only measure that mattered. *“When you excel, I don't think your gender matters, particularly in the area of scientific research.”*

Switchover from Scientist to Strategist

A Shift from Science to Strategy happened to Dr. Shailaja while she was deeply involved in her research work as a scientist. She was engaged in developing technologies for defence and space sectors and successfully transferring them to industries. Her transition to the Chair of Business Development and Research Management (BDRM) role at the same institute was on request, and it wasn't something she had planned. *“It was a tough decision. It was not voluntary. I did not choose to do so because I was doing very well with the R&D projects.”* However, at that time, a leadership change happened at the institute. And the new director needed support in



BDRM. He saw potential in Dr. Shailaja and approached her for the responsibility. Though she was hesitant, her colleagues encouraged her, recognising her strong communication and interpersonal skills.

Accepting the role meant transitioning from developing technology to managing research and promoting technologies of the entire institute, but Dr. Shailaja was ready to take on this challenge. Initially, she tried splitting time between research and management, but balancing both responsibilities proved difficult. Her students struggled to get her time, and eventually, she decided her last Ph.D. student would be her final one. *“I consciously made the switch by then, having realised my potential and capabilities, such as PR skills, interpersonal skills, leadership*



qualities to lead the team, and the ability to aptly represent the institutional presentations, and I thought it would be the best way of giving back to my organisation.” Although unfamiliar with technology transfer at first, she took it in her stride, learnt the nuances and excelled with the same determination she always had.

The Catalyst for Growth

For Dr. Shailaja, managing science and technology required as much innovation as the research itself. When she took on the role fully, she introduced new strategies and best practices into the existing technology transfer models. *“One of the key strategies we introduced was industry mapping, analysing industry gaps and needs and then aligning them with the expertise of our scientists. We would go back to our researchers and say, ‘You have the expertise and requisite skills in this area, and here’s what the industry actually requires.’”* This mapping and matching innovation led to a rise in industry projects, more than doubling within five years after her taking over as Business Head since 2017.

Her business development role brought in recognition and branding for the institute because of the new business models and timely delivery of commitments, resulting in industries to feel confident in engaging with CSIR-IICT. The new risk-sharing model, wherein industries come

on board at Technology Readiness Level (TRL) 2 or 3, with a letter of intent, reduced financial risk for industries and increased their willingness to invest in emerging technologies.

Patent commercialisation also increased significantly under Dr. Shailaja’s leadership. Before 2017, patent out-licensing was poor, with less than 0.5%, but during her tenure, it crossed to over 3%, falling into the 5-7% of the world standard. This resulted in a tremendous increase in CSIR-IICT’s revenue, which grew sevenfold in a 5-year period. A major milestone was the ₹240 crore technology transfer deal with Sun Pharma, the first of its kind in CSIR’s history in the drug discovery area of the healthcare sector.

“CSIR-IICT was the first among CSIR’s 37 laboratories to tap into Corporate Social Responsibility (CSR) funding for R&D since 2019 once that gateway had opened up. Each year, we secured CSR-funded projects worth over ₹1 crore, something not very common in our peer labs.” She also played a key role in connecting other CSIR sister labs for CSR fund raising during COVID-19 due to her strong networking with corporates. Further, as skill nodal officer, she conceived the industry-oriented, Finishing School program for Chemistry postgraduates, which happens to be one of the best-upskilling programs



under the CSIR integrated skill initiative. The program was carefully designed with a specially crafted curriculum by the scientists in collaboration with experts from the Pharma industries for providing requisite hands-on training to the students that ensured 100% employment.

Recognitions and Achievements

For Dr. Shailaja, every recognition she receives is important. She published more than 35 research papers in reputed international journals that fetched 75 citations and supervised 4 PhD students and more than 25 Master students. She received the prestigious CSIR-DAAD (German Academic Exchange Service) fellowship at a young age of 32 years for conducting Advanced research studies at University of Kiel, Germany, on official deputation during 1996-97. As a technology developer, the technologies she transferred to industries brought her accolades and recognition. *“No work should sit on the shelf. Any innovation or invention by a scientist should always be translated into something useful for the public. That’s what gives maximum satisfaction to a scientist.”*

As the spokeswoman of the organisation, Dr. Shailaja pitched technologies to industries and secured high-value projects through her negotiation skills, having the techno-commercial edge.

“I feel happy that my organisation rewarded and appreciated me in recognition of my technology transfer abilities and negotiation skills. It demands certain soft skills to showcase the niche skillset and expertise of our scientists and infrastructure to convince the industries for a balanced negotiation.”



She also chaired the International S&T Affairs Group (ISTAG) at CSIR-IICT and effectively managed two major overseas collaborations with the University of Renn under Indo-French and with RMIT in Australia, running successfully and yielding high-impact publications and exchanges of students and scientists. She has been invited as a resource person in the area of science diplomacy, science technology and innovation policy advocacy and delivered invited talks at several international fora that include Pretoria, South Africa, OPCW, The Hague, The Netherlands and KISTEP, Seoul, South Korea.

In a rare and unique milestone achievement in her career, Dr. Shailaja Donempudi, at the age of 60, has been appointed as a Distinguished Scientist to head Business Development Group (BDG), a new vertical initiated by CSIR Headquarters in New Delhi. This has fetched her a place amongst the very few highly accomplished top brass leaders of CSIR. She now oversees the business development strategies of all 37 CSIR laboratories in India. Her focus is on building a clear roadmap for technology commercialisation, improving ease of doing business with CSIR, and strengthening collaborations with industry and government bodies.

Her new role builds on the strong foundation she laid at CSIR-IICT, and she is now focused on taking CSIR's visibility, partnerships, and revenue growth to the next level, both in India and internationally. She has once again shown her mettle to gracefully accept the challenge of moving away from her hometown, reiterating her commitment to work in a second innings soon after her superannuation this year in January.

"I could embrace this offer as my second innings for two reasons. First, it will be a pinnacle in my professional career and give me an opportunity to work for the greater good. Second, because of the strong support received from the grown-up kids, spouse and, more importantly, the joint family structure, I have the strength to strike the balance at home remotely and with periodical visits." Further solidifying her position as an industry leader, Dr. Shailaja was a lead panellist along with industry leaders from Honeywell, DuPont, and The Chemours Company at the 45th Thought Leadership Conversations on R&D Strategies for Unlocking Innovation, organised by Tata Consultancy Services-Asia Pacific on June 27, 2024. This event, telecast live on LinkedIn across all Asia-Pacific countries, recognised her insights on AI and other emerging trends shaping R&D practices. This rare honour acknowledged her expertise and impact in the field.



A Legacy of Leadership and Service

Dr. Shailaja hopes to be remembered as a leader who transformed the role of Science & Technology (S&T) management, which can be instrumental in enhancing the performance of the organisation rather than just liaison and coordination. *"I should also be remembered as a person who inspired my team members and motivated them to grow by getting MBA degrees in Technology Management and getting grant-in-aid project proposals from DST on par with the scientific staff during my tenure. I encouraged them to enhance their S&T managerial skills and proficiency by organising training in Project Management Tools by faculty from Symbiosis Institute of Business Management that helps in ease of managing the projects."* Thus, she actively pushed her team to take on proposal writing, secure projects, and contribute to skilling, patent knowledge, and intellectual property rights, publishing articles in areas that had previously been overlooked.

“Innovation matters in every sector, and that will help contribute to enhancing the KPI's of an organisation in a big way, both branding and enhancing the revenues.”



Beyond business development, she has also contributed immensely to scientific social responsibility (SSR). She was instrumental in coordinating projects with state government line ministries in waste management, farmer-centric technologies, bioremediation of lakes and STPs. She has authored scientific articles published by NAM S&T Centre on One Health, Intellectual Property Rights (IPR), and also filed a joint patent with an industry on immunity-boosting oral formulation, which will soon be launched as a product. Besides her role in BDRM, she had another side to her work, pursuing societal activities in science as part of SSR by engaging with school students under the CSIR-Jigyasa program to inculcate scientific temper in them. She registered a trademark on ABHAY (Awareness and Best Practices on Holistic Development of Atmanirbhar Yuva), which teaches about how to make the students resilient and future-ready by following the new Integrated Holistic Systems Design (IHSD) pedagogy. She gives motivational talks to college-goers and to school students, inspiring them to take up science as a future career option.

She worked with the Indian Development Foundation (IDF) as a resource person for the Ignite STEM passion teacher's training programs in collaboration with CSIR labs, and her contributions as the skill nodal officer and CSIR's Jigyasa program, training the teachers to raise curiosity for science among students, were commendable. Dr. Shailaja is Vice Chairperson of the Zaheer Science Foundation (ZSF), where she promotes science communication and outreach.

Even after superannuation, Dr. Shailaja continues to be engaged in the scientific community. She is often invited as a speaker and lead panellist for discussions on technology commercialisation, IPR, and leadership skills under the 'Viksit Bharat' initiative. She has addressed MBA graduates at SIBM and BITS Pilani (Hyderabad campus) and delivered lectures to scientists at NAARM. She also represented the IDF at the United Nations headquarters in New York during CSW69 on 13th March 2025, where she spoke on 'Empowering Women for Economic Sustainability'—a testament to her ongoing commitment to driving change.

Her Inspirations

Dr. Shailaja draws inspiration from many sources, but her mother was the one who inspired her the most. "My mother inspired me in a big way because after marriage and after kids, she pursued her higher studies. She went on to do her graduation and then her post-graduation in Telugu language." She credits both her parents for instilling in her the belief that only good education will fetch her a decent life.

Dr. Shailaja strongly believes that support from family members, particularly the spouse, is crucial for a woman's career success. She emphasises that living in a joint family, though demanding, provides symbiotic advantages that help women balance professional and personal responsibilities. She attributes her ability to manage both spheres of her life to good planning, particularly in deciding the right time for major life decisions like starting a family. Her teachers were also an inspiration for her. While she does not have one specific mentor, she has been inspired by Indra Nooyi, the former CEO of PepsiCo. "Whenever I listen to her interviews, I feel that's the kind of focus and balance a woman needs to have." She also admires Kiran Mazumdar-Shaw, the founder of Biocon, for her achievements in the business world. These women are achievers and are an inspiration to everyone.

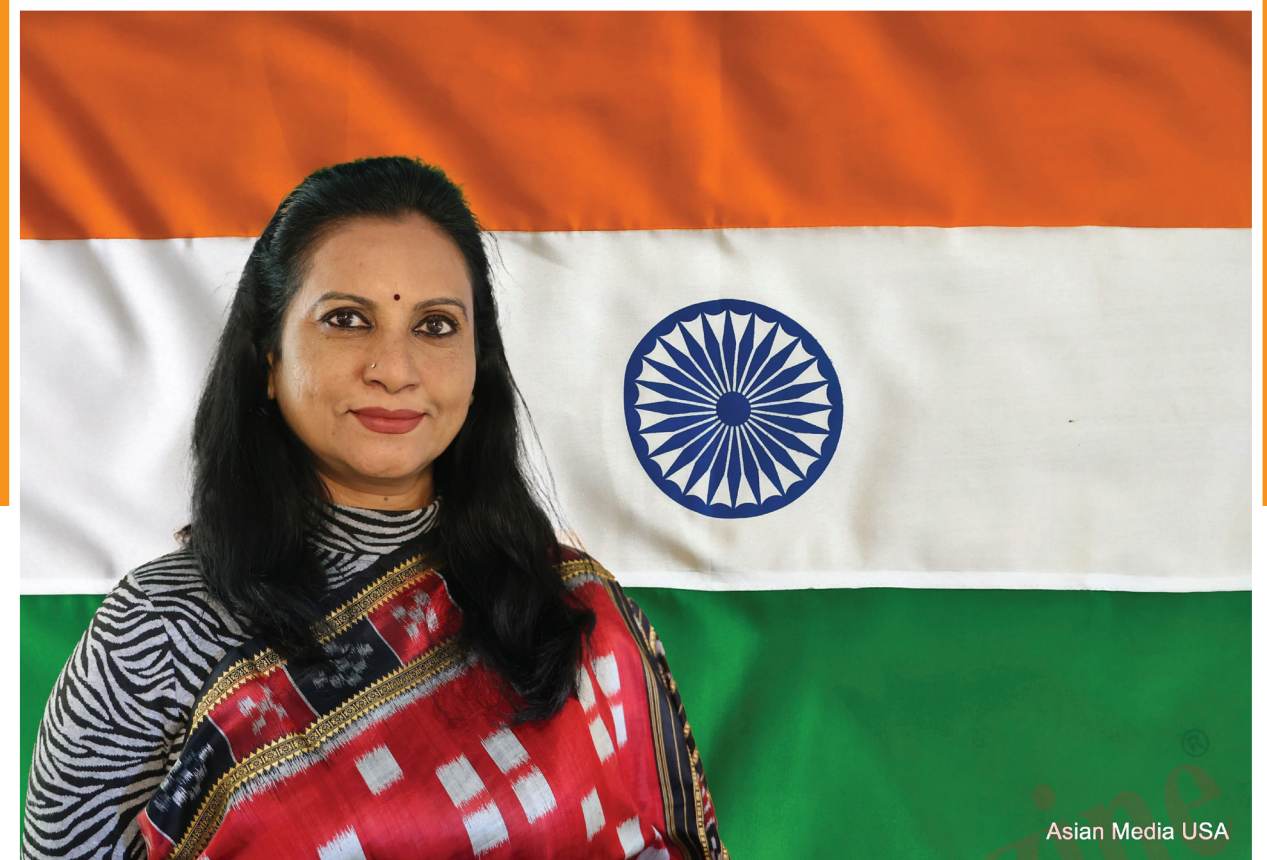
Finding a Balance between Learning, Nature, and Self-Care

Beyond her work, Dr. Shailaja is an avid traveller.

"I love exploring new places, and I like to interact with people from different walks of life. I am a person who wishes to be a lifelong learner, so I have been upskilling myself with weekend online classes on ppt skills, investment, etc."

She got a degree from INSEAD in Strategy Management and Business Essentials (SMBE), which she completed through a weekend online course.

And then there's gardening. While her spouse, parents and in-laws were always involved in gardening, she never had it in her. However, she decided to learn it herself. "Both my kitchen gardening and floral gardening, I learnt online. And now, I have a terrace garden where I have beautifully trained myself, growing my own vegetables and



greens, besides an aesthetic-looking garden getting solidly trained on growing the roses, which are tricky." She has also built a group of gardening friends through online learning, exchanging knowledge on pest control, sunlight requirements, and plant care.

Apart from travel and gardening, she stays active through yoga and meditation. She practices Heartfulness meditation as an abhyasi of Kanha Shanti Vanam and maintains a routine of yoga and evening walks, often on her terrace amidst her plants. These activities keep her body and mind agile and active.

Encouraging Women in Science

Dr. Shailaja is passionate about science, and she keeps encouraging young women to pursue careers in science. She says, "Science is a field that can build nations. It has the power to place our country at the forefront of technological advancement. I always say that innovation is the key for us to grow as a nation. If we want to achieve a \$30 trillion economy and place ourselves as a developed nation (Viksit Bharath) by 2047, the only gap we need to fill is in gaining innovative skills. And that can be best pursued in the field of science."

She finds immense satisfaction in research, patenting, and seeing scientific innovations transition from

lab-scale research to real-world applications. She recalls the project of developing Hydrazine Hydrate (HH) at CSIR-IICT, which took over 20 years to complete journeying with the industry changing goals to finally launch the 10,000 TPA plant in Gujarat. HH is used as a fuel in rockets and as an intermediate in various pharma, polymer and agri industries. Scientists and engineers worked tirelessly, moving through every stage from lab-scale research to pilot-scale trials to commercial-scale production. The technology once developed was dedicated to the Nation by the Hon'ble Prime Minister in October 2022, and by July 2023, the first consignment was flagged off by Gujarat Alkali Chemicals Limited (GACL) in Dahej, Gujarat. "That gave us so much satisfaction. It saves more than ₹400 crore worth of foreign currency, reduces imports, and opens up export potential. I understand that taking a product from the lab to the market is a long and complex process, but once it does, you feel so gratifying and a sense of fulfilment."

Dr. Shailaja advises the youth to embrace innovation and entrepreneurship as essential skills for solving the critical problems of today's world. Her journey serves as a powerful inspiration, proving that women can not only break barriers in STEM but also redefine the landscape of innovation and leadership.