

DIST. PROF. SURESH K. BHARGAVA AM

DEAN, RESEARCH & INNOVATION (INDIAN PARTNERSHIP) AND **DIRECTOR FOR CAMIC**

"My life mission is to make this world a better place than it was when I entered it"



Journey of Science and Research

Distinguished Professor Suresh Kumar Bhargava AM,

LIFELONG PASSION IN CONNECTING

Science and Technology India-Australian links

THE OPPORTUNITIES ARE ENDLESS AND THAT

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AUSTRALIA AND INDIA

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Professor Suresh K. Bhargava

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FTSE, FNAE, FAAAS, FRSC, FRACI, FNASI, FAPAS, FTWAS-UNESCO

Dist. Prof. S. K. Bhargava is currently the founding director of the Centre for Advanced Materials and Industrial Chemistry, former Deputy Pro-Vice Chancellor (International) and now Dean (R&I, on India) at STEM college, RMIT University, Melbourne.

> "I want to see this world through my journey with Sci-

He was born and brought up in Meerut, Uttar Pradesh, India. Always at the top of his class since year 8 and at the age of 19 he completed his Masters and became a lecturer of chemistry in the IP College Bulandshahr, Meerut University College. In 1979, he was the only scholar in chemistry selected from India for the Commonwealth Academic Scholarship allowing him the opportunity to pursue his PhD under the guidance of world-renowned Professor E W Abel at University of Exeter, UK.

Rising above the academic and technical challenges, he completed his PhD within a span of 2.5 years with 15 publications in top tier scientific journals. Prof. Abel was extremely proud of his achievements and his thesis was examined by Noble Laureate Sir Geoffrey Wilkinson. Subsequently, he was also conferred an honorary D.Sc. by Rajasthan University in 2009 which was presented by the then President of India, Smt. Pratibha Patil, for his academic leadership and outstanding innovations.

After finishing his Ph.D., he returned to India and re-joined his university. But he always knew he was meant for greater things. In 1983, he was offered a research fellow position at the Australian National University in Canberra, Australia. Throughout 1988 and 1990 after working as a scientist for the Commonwealth Scientific and Industrial Research Organisation in the fuel technology division at Lucas Heights, he joined the Royal Melbourne Institute of Technology, Melbourne as a Senior Lecturer in 1990.

At RMIT, Prof. Bhargava flourished in his academic and scientific career, and he is currently the highest cited academic of RMIT University with an H-index of 76, over 700 peer reviewed publications, over 21,500 citations, 12 patents five of which are either passed on to industry or licensed for commercialisation, 2 books and 15 book chapters. He has classified in the world's top 1% academic in the resource sector and in industrial chemistry. At RMIT, he also founded a world-class multidisciplinary research centre, the Centre for Advanced Materials and Industrial Chemistry (CAMIC), which currently has 51 researchers from different disciplines and is connected with over 17 universities worldwide

During his distinguished career; Prof. Suresh has been awarded many prestigious national and international awards (almost every year since last 15 years) including 2016 Khwarizmi International Award (KIA) of Iran, 2015 CHEMECA medal (The highest honour in the chemical engineering profession in Australia and New Zealand), the most prestigious Indian National Science Academy's P. C. Ray Chair (distinguished lecture series 2014), RMIT University Vice Chancellor's Research Excellence Award, Applied Research award (2013), R. K. Murphy Medal (2008) by the Royal Australian Chemical Institute and in 2017 he was awarded with the Non-Resident of India (NRI) of the Year Award in the category of

"I am thankful for the opportunities given to me in enabling meaningful research and industry partnerships between the two countries". As he looks back at the relationship between India and Australia over the years, Prof. Bhargava remains optimistic.

ence and Research".



1983-1986 1996-1999 2005-2006 2008-2009 2010-2011 2012 Prof Bhargava started as a Hindi Hired by former Vice President of Established the 'Professor C.N.R. Member of the Commonwealth Helped the Victorian Trade Key member of the Victoradio announcer in Canberra. delegation to the former Deputy Offices in Bangalore, Mumbai BHP Billiton, Dr Megan Clark AC, Rao Postgraduate Research Excelrian Government Board PM Hon Tim Fisher to India and Dubai. Invited as Visiting Professor at to develop BHP science & techand Selection Committee Indian Institute of Sciences, Banfor the New Horizons activity Invited as a Consultant by BHP nology partnerships with Indian Elected non-executive board which established the Victoria Indian Doctoral Billiton on the Indian market for institutions. member of Aditya Birla Mineral galore, India. Initiated a program with National collaboration and partnership Led to the establishment of the Ltd. (ABML), ASX listed. Scholarship (VIDS). Chemical Laboratory, Pune on air opportunities. Established a Joint Research Cenpollution control. major Australian-Indian research tre with CSIR-IICT Hyderabad. collaboration 2013-2014 2015-2016 2017 2018-2019 2022 2020-2021 Honoured as the 'Best Indian Selected for the P C Ray Chair by Intake of the first cohort of 17 In response to the COVID-19 Founded a tripod model Initiated a unique award-winning RMIT-AcSIR Global PhD program students in the RMIT-AcSIR proof global collaboration Pandemic deteriorating situation presented by the former Prime the most prestigious honour to a which connects RMIT with 39 gram with a target of 100+ in any of international students Prof between RMIT-CSIRO-Minister Hon Mr John Howard. foreign scientist. leading national laboratories single year by 2025. Bhargava innovated a new model BCSIR. This partnership First Australian to be elected Participated in the high-level across India. Double PhD pro-RMIT University received the of mentorship Covidya (Co-विधा) or complements an existing International Workshop 'Women gram was designed to train more prestigious Victorian Internation-"knowledge together" (in Hindi). joint research program tional Academy of Sciences, India with AcSIR and CSIR-IICT in STEMM', Delhi as a delegate than 300 Indian students by al Education Award for 'Excel-(FNASI). from the Australian Academy of lence in Innovation in Partnership Hyderabad. Science. & International Engagement' for the innovative RMIT-AcSIR program.

ACADEMIC IMPACT

{OVER 30} YEARS OF TRANSFORMATIVE MENTORSHIP



I learned from both worlds: Industry and Academia

At the beginning of 2011, Professor Bhargava established a Joint Research Centre with IICT in Hyderabad which is jointly funded by the Government of India (CSIR) and RMIT University. The centre provides a joint PhD degree from RMIT and IICT. The unique program was designed to foster international research collaborations between India and Australia

by expanding global research and industry alliances through training young Indian students on a global platform. The centre has produced 34 industry ready PhDs so far and currently hosting another 21 PhD students that are working under the joint supervision of RMIT and IICT scientists.

He has supervised more than 60 PhD students, of which 28 belonged to the Indian sub-continent. His service to produce the next generation of industry-ready scientists and engineers is

Prof. Bhargava continues to find inspiration in developing the next generation of industry-ready scientists and engineers above anything else. "My legacy to RMIT and academics will be my mentorship to my students who are living embodiments of the lessons and values I taught



them and will continue to challenge the norms and make important breakthroughs".

One of the most important aspects of his career has been his role as mentor. "I always tell my students that age is not a barrier to making discoveries, it is your attitude which will make the difference".

Prof. Bhargava is a fellow of 7 academies around the globe including FTSE, FNAE. FAAAS, FRSC, FRACI, FNASI In 2021, he joined The World Academy of Science-UNESCO and most recently he become a Member of the Order of Australia. He has professor at many top Indian institutions including IIT Bombay, ICT Mumbai, UKM Malavsia.

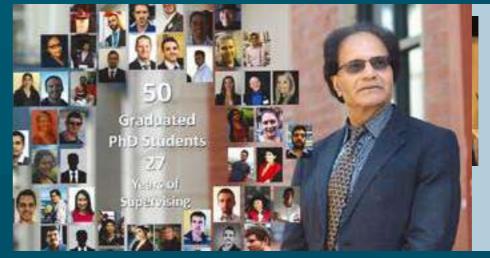
Prof. Bhargava has also held visiting positions in different research institutes since 1986 such as Indian Institute of Science Bangalore, India, (1986, 2007); Jawaharlal Nehru Centre for





Advanced Scientific Research, Bangalore, (2013-ongoing); Indian Institute of Technology Bombay (IITB), (2018-Ongoing); Dr Balwant S. Joshi Distinguished Visiting Professorship in Chemical Engineering/Chemical Technology/Applied Chemistry at Institute of Chemical Technology, Mumbai, (2018-2019); Lifetime Academy Professorship – Academy of Science & Innovative Research, India, 2019 and more.

Without any doubt, Prof. Bhargava is an outstanding ambassador of the Australian higher education around the world.



CURRENTLY HE HAS MENTORED MORE THAN 60 PHD, AT LEAST 28 FROM THE INDIAN **SUB-CONTINENT.**



"I WANT TO SEE THIS WORLD THROUGH MY JOUR-**NEY WITH SCIENCE AND RESEARCH".**



>700 PUBLICATIONS 21 BOOK AND **BOOK CHAPTERS, 12 PATENTS.**



AUSTRALIAN, INDIAN > \$28 MILLION IN GRANTS.



TOTAL CITATIONS: >21,700, I-10 INDEX: 413 AND H-INDEX:76.



Professor Bhargava is a world-renowned multidisciplinary scientist who regularly crosses

As a multidisciplinary research scientist and innovator, some of his landmark discoveries explore the properties of gold at the molecular and nanoscale for sensing, catalysis, and biomedical applications. Scientific breakthroughs include electrosynthesis of gold nano spikes, where he pioneered the chemical templating effect of lead ions for synthesis of gold in conical morphology with selective exposure of crystal facets. Through various $\,$ deposition, electroless deposition, galvanic replacement and underpotential deposition, porosity, particle size and composition. Fabricated nanostructured surfaces find wide apsensing.

SCIENTIFIC AND CONTRIBUTIONS

Prof. Bhargava's mercury sensing work has been highly influential and cury sensors. The research has led to several high impact publications and a PCT patent (PCT2008903362).

Bhargava has also pioneered unique solutions for mercury abatement from industrial exhausts and wastewater such as ceria-zirconia modified MnOx catalysts for mercury adsorption and oxidation and the use of waste oil for mercury removal, which was researched in collaboration with

eration. The research led to a patent application (APP No: 2013903747).



In 2010 established the 'Professor C.N.R. Rao Postgraduate Research Excellence Award' in collaboration with RMIT and Jawaharlal Nehru Centre for Advanced Scientific Research



2017, Prof. Bhargava was the founder of 'Academic Sharp Brain', hosted as part of the RACI Centenary Congress.



"I AM THANKFUL FOR THE OPPORTUNITIES GIVEN TO ME IN ENABLING MEANINGFUL PARTNERSHIPS BETWEEN THE TWO COUNTRIES".

DISTINGUISHED PROFES-SOR SURESH BHARGAVA AND 2014 NOBLE PRIZE WINNER PROFESSOR SHUJI NAKAMURA DURING HIS VISIT IN CHINA



CLASSIFIED AS ONE OF THE TOPMOST RESEARCHERS IN MERCURY POLLUTION CONTROL, HIS ACHIEVEMENTS ARE WELL RECOGNISED IN THE RESOURCES SECTOR

the borders of scientific disciplines to innovate solutions to real-world problems. In 1990, he started at RMIT from scratch. Today, Professor Bhargava is classified in the top 1% academics in the resource sector and top 1% academics in industrial chemistry.

electrosynthesis methods such as bubble templating, chemical templating, lateral electrohe has demonstrated tailored synthesis of gold with excellent control over its morphology, plications in electrochemical, optical, surface-enhanced Raman scattering and gravimetric

DRIVE AN IMPACT IN RESEARCH ON AN ACADEMIC PLATFORM

In 1990, he started at RMIT from

scratch, where he established in 2010

a state-of-the-art research centre that

is now world-renowned as the Centre

for Advance Materials and Industrial

Chemistry, CAMIC. Under his leader-

ship the centre has developed several

new products, synthesis methods and

CAMIC. SOLUTION ENGINEERING

technologies.











Throughout hiscareer, he has been passionate about enabling meaningful partnerships between Australia and India.

Professor Bhargava is the recipient of the most competitive and collaborative research grants at RMIT University in both number and value (>\$24 million over the last 20 years) from various sources including the ARC, AISRF, industry and CRC-P. This includes a highly competitive Australia-India Strategic Research Fund Grand Challenge (\$6 million, success rate ~2%) for the project entitled: Mini DME: A custom-designed solution to bring stranded gas to energy markets (2013) in collaboration with The University of Melbourne, CSIRO, the Indian Institute of Petroleum (IIP), Indian Institute of Technology (IIT) Roorkee, and Bharat Petroleum

Professor Bhargava's passionate research into gold science extends into molecular engineering, wherein he has created a library of important metal-organic compounds whose properties can be controlled at the atomic level. This includes the largest portfolio of rare Au(II) complexes, and the synthesis of bimetallic compounds containing two gold atoms in close proximity. These unique bimetallic compounds can even be synthesised in mixed valent states containing Au(I) and Au(III) atoms. Exploiting different gold oxidation states in one complex, he explored their biological activities and identified enormous potential for their use in anti-cancer applications, showing selective in-vitro activities as high as 200 times those of commercially available platinum drugs (AU2016902835) against prostate and cervical cancer cell lines.



Exploiting different gold oxidation states in one complex, he explored their biological activities and identified enormous potential for their use in anti-cancer applications, showing selective in-vitro activities as high as 200 times those of commercially available platinum drugs (AU2016902835) against prostate and cervical cancer cell lines. Similar observations were confirmed in-vivo studies performed in collaboration with the University of Melbourne. His team at RMIT Australia is currently closely collaborating with Dr Chandrashekhar at IICT (Indian Institute of Chemical Technology) under the Australia-India biotechnology collaboration **program**. Again, the impact of this research is outstanding with Professor Bhargava featuring in the top 1% of metallodrug researchers for cancer treatment in Australia.

JOURNEY OF SCIENCE RESERACH AND INDUSTRY BETWEEN AUSTRALIA AND INDIA

He was recently invited as a plenary speaker at the International Health Industry Forum, China, attended by 100 other leaders from around the world. This research has tremendous potential and has received wide attention from major pharmaceutical companies including Heraeus Ltd, Germany, the largest producer of cisplatin (a common drug for cancer treatment). His recent article in 'Chemical Reviews' (2020,120,7551-7591) has filled a knowledge gap in the field of gold therapies and provides a comprehensive and authoritative guide on the properties of gold for translation into real world applications.

contributions in the field of environmental catalysis such as catalytic wet oxidation (CWO) in strong alkaline solutions. Having successfully

> He was a consultant to Dr Clark during their partnership in the establishment of the IITB-Monash Research Academy at IIT Mumbai, which resulted in million by BHP.

identified the mechanisms at work under these conditions, he was able to translate these fundamental findings into a new CWO technology to treat Bayer liquor for Alcoa's refineries, addressing a >\$400 million/year loss in productivity. His two patents and several seminal publications resulting from this work include an invited refereed review which has twice been recognised as a Hot Paper with 468 citations.

Professor Bhargava's interdisciplinary research, outlined above, has actively sought to bridge the gap between fundamental science and applied technology. From his scientific breakthroughs, he has successfully conceived real-world applications, not once, but again and again. Using his global network and sustainable links with industries and government partners, his research plays an increasingly important role in clean energy, water purification, metallodrug therapies and air pollution control.

Prof. Bhargava is closely working with IIT Bombay on the application of 3D printed catalysts and components for heat removal in hypersonic flights under the VAZARA fellowship. He has also innovated a novel and highly efficient method for the green synthesis of soluble graphene from aqueous polyphenol extracts of eucalyptus bark in collaboration with Indian research partners and demonstrated its application in high-performance supercapacitors. The developed method brings the cost of **Professor Bhargava has also made significant** electronic grade graphene down to less than a dollar. The prospect of economic production of graphene from natural sources has attracted several venture capitalists from China and USA.

Prof. Bhargava has also organised several joint symposiums and international conferences such as the 'Australia-India Joint Symposium on Smart Nanomaterials', which aimed to bring key Australian and Indian researchers together, the International Symposium on Molecular Design at RMIT University in 2015 and the international conference on 'Gold at the Molecular Level' at RMIT University in 2007.





Invited by the Office of the Prime Minister of Australia to meet former Prime Minister Hon Kevin Rudd before his visit to India, who subsequently doubled the Australia-India Strategic Research Grant to \$100 million in total, laid down a pathway for a unique partnership with Indian scientists, engineers and businesses in 2009.

CULTURAL ENGAGEMENT



Co-विधा

"It was difficult to adjust at first. In the '80s, most Australians knew India for spices and cricket, but I found they were keen to learn more about the country," Prof. Bhargava recalled.

CONNECTING INDIA AND AUSTRALIA

Prof. Bhargava harnesses a tremendous cultural orientation and a great admiration for the Indian philosophy and values. So, he never left an opportunity to culturally engage and contribute towards the welfare of the Indian community in Australia. In 1983 he was the only journalist in Australia who interviewed Ex-Prime Minister of India, Bharat Ratan, Late Shri Atal Bihari Vajpayee on live Radio on the auspicious occasion of the Indian festival of Holi. As a radio announcer he was also instrumental in running infotainment programmes on the contributions of Walter Burley Griffin, an American architect, who designed over 350 buildings in 28 years notable among which are the Australia's capital city of Canberra, New South Wales towns of Griffith and Leeton, Capital theatre of Melbourne, the central library at Univer-

sity of Lucknow, India and some other 40 commissions of libraries, museums, and puildings for Indian universities.

He was also invited by the then Australian PM Tony Abbots to join his team to welcome and meet beloved Indian PM Narender Modi at MCG dinner on 14th November 2014.

Prof. Bhargava is well known for his knack for framing inspirational quotations. He recently noted that "In the mathematics of life, happiness is a crazy equation. when you divide, it multiplies"

challenges" but "Growing through thes challenges".

In response to the deteriorating situation of international students in the

pandemic, Professor Bhargava innovated a new model of mentorship focussing not only on scientific guidance but also providing much needed mental support through an informal digital environment. He appropriately named this Covidya or "knowledge together" (in Hindi). Students learn more within a peer group setting than in traditional teaching environments of the university systems. With monthly meetings, students are invited to speak, share, and learn in a trusting and scholarly environment, which jointly benefits and strengthens the ever-important mentor-student relationship.

"There was once a perception that India had a lot to learn from Australia, but as recent developments have shown, the time has come that India can offer a lot too,"

AWARDS AND RECOGNITIONS

VICTORIAN AWARD WINNER

RMIT University was awarded the Victorian International Education Award for 'Excellence in Innovation in Partnership & International Engagement' for the RMIT-AcSIR program in 2018. The program was highly praised by a distinguished group of Australian scientists and entrepreneurs.

The Victorian International Education Awards were presented by Study Melbourne and are an initiative of the Victorian Government to support the international education sector.

- "This is a wonderful achievement and will make such a difference for the future"
- Dr Megan Clark, Head of the Australian Space Agency
- "Fascinating and indeed very impressive! RMIT

is on a great path in India"

 Simon McKeon AO, Chancellor of Monash University





2009, Honoured with the Honoris Causa DSc. Conferred by Rajasthan University, Jaipur, India and presented by the former President of India, Hon Pratibha Patil.

NRI OF THE YEAR AWARDS





During 2017, he was also honoured with the Non-Resident of India (NRI) of the Year Award in the category of Academics for the best in Asia-Pacific region by the TIMES NOW Network. Out of 25,000 nominations, 332 were shortlisted and 19 were selected in 4 categories. This was telecasted in the whole TIMES NOW network in over 110 countries.

2013 EXECUTIVE OF THE YEAR



Honoured as the 'Best Indian Australian Executive of the Year', presented by the former Prime Minister Hon Mr John Howard.

CELEBRATING DIWALI



2020 Diwali Celebrations RMIT University on YouTube



- 2012, Honoured with the Federation of Indian Associations of Victorial's Highest Community Services Award in Melbourne, Australia.
- 2013, Honoured with the Asian Paint Award at CHEMCON in the Institute of Chemical Engineering, Mumbai, India.
- 2015, Awarded the 'P.C. Ray Chair' Indian National Science Academy, one of India's most prestigious honours to a foreign scientist



Professor Bhargava received the prestigious lifelong distinguished professorship of AcSIR by the then- Minister of Health and Family Welfare of India Harsh Vardhan.

COMMERCIAL LEADERSHIP

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HER EXCELLENCY HON LINDA DESSAU AC VISIT TO INDIA

In 2017 Professor Bhargava was invited by Her Excellency Hon Linda Dessau AC, Governor of Victoria, to accompany in her visit to India.



PRIME MINISTER HON MALCOLM TURN-BULL'S VISIT TO INDIA

Professor Bhargava in 2017 Accompanied Prime Minister Hon Malcolm Turnbull's high-level delegation to India.



QPM (QUEENSLAND PACIFIC METAL LTD) CHAIR TITLE IN 2021.

Professor Bhargava was conferred chair to QLD Pacific Metal to drive innovation link to critical mining for Lithium-lon Batteries Technologies for clean energy.



PROFESSOR BHARGAVA INVITED BY PROF AJAY KUMAR SOOD TO HIS OFFICE

In 2022, he was invited by Prof Ajay Kumar Sood, the Principal Scientific Adviser to the Government of India. To discuss future collaborations between India and Australia for greener energies and extending Auwsh.



PASSION AND DRIVE

Building ever-stronger connections with the scientific community in India



Lifelong passion in connecting Australia and India.



PROF. SURESH BHARGAVA WITH MR S JAISHANKAR. INDIA'S MINISTER FOR EXTERNAL AFFAIRS

INDUSTRY LEADERSHIP

Prof. Bhargava always had a lifelong passion in connecting India and Australia. Through advisory roles with Australian PMs, Premiers and Governors on Indo-Australian relations, he has been one of founding architects of the Australia-India Strategic Research Fund. He also hosted eminent Indian scientist and RMIT University Visiting Fellow, Prof. CNR Rao, FRS for a dinner where he was presented with a gift by the Governor of Victoria, Prof. David de Kretser and Prof. Margaret Gardner, AO, Vice-Chancellor and President of RMIT University.

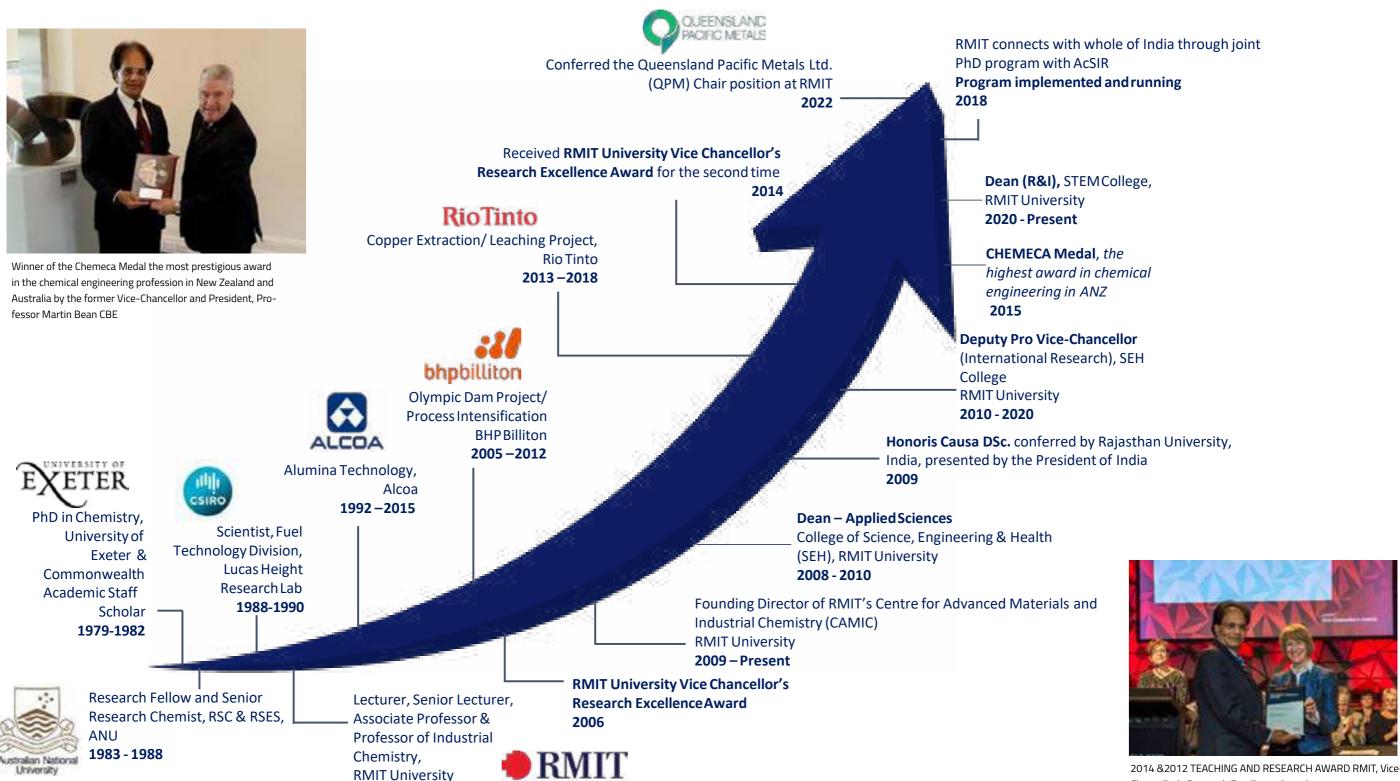
Prof. Bhargava has also provided consultancy and advisory services to several industries such as BHP Billiton, Alcoa World Alumina, Rio Tinto, Exxon Mobil, Australia Alumina Council, southern pacific petroleum, Canadian alumina council, Hindalco industries Tata Innovations Ltd, Aditya Birla group, and Reliance Industries. Of his 12 patents five have either been passed to industry or licensed for commercialization.

HIS PASSION AND DRIVE HAVE INSPIRED BOTH OUR RESEARCHERS AND THE GENERAL COMMUNITY

He has been an inspirational figure to , many and pushed boundaries throughout his life while innovating new ways for how universities should work with industry, creating jobs and changing lives. He has helped preserve, create jobs, and transformed not just companies but also individual lives both in Australia and India.

OVER 30 YEARS OF JOURNEY PROVIDING EXCELLENCE IN INNOVATION IN PART-

NERSHIP & INTERNATIONAL ENGAGEMENT BETWEEN AUSTRALIA AND INDIA



UNIVERSITY

1990 - 1996+

Chancellor's Research Excellence Award

QUEEN'S BIRTHDAY HONOURS LIST



Recognised for his works in tertiary education and his continuous efforts in connecting Australia and India, RMIT Professor Suresh Bhargava AM, Dean of Research & Innovation (India) STEM College, has been recognised as one of 2022's Queen's Birthday Honours recipients.



Professor Margaret Sheil AO | Vice-Chancellor and President of Queensland University of Technology



Kathryn Campbell AO CSC and Bar Secretary Affairs and Trade





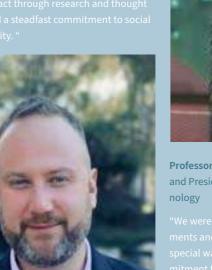
Luke Sheehy | Executive Director of the Australian

Technology Network of Universities

The Hon. Ros Spence MP | Minister for Prevention of Family Violence / Minister for Multicultural Affairs / Minister for Community Sport / Minister for Youth



Australian Government | Department of Foreign



Professor Pascale G. Quester | Vice-Chancellor and President of Swinburne University of Tech-

https://www.rmit.edu.au/research/centres-collaborations/centre-for-advanced-materials-and-industrial-chemistry



JOURNEY OF SCIENCE RESERACH AND INDUSTRY BETWEEN AUSTRALIA AND INDIA

Dist. Prof. Suresh K. Bhargava AM,

Prof. Suresh K Bhargava AM, FRSC, FRACI, FTSE, FNAE, AAAS is the Founding Director of the Centre for Advanced Materials and Industrial Chemistry, and Deputy Pro-Vice Chancellor (International) at the College of Science, Engineering and Health, RMIT University.

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