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Ravi Kumar obtained his doctorate in natural sciences from the Max Planck Institute for Metals Research (currently known as Max Planck Institute for Intelligent Systems), Stuttgart, Germany in 2004 with a “Sehr gut” grade (very good) with a fellowship from the Max Planck Institute. Subsequently, he continued in the same institute as a postdoctoral researcher and guest scientist. He worked on the high temperature deformation behavior of polymer precursor derived ceramics during his stay. After 6 years of stay at the Max Planck Institute, he moved to the Institute for Shock Physics in Pullman, USA and worked on the dynamic response of bulk metallic glasses for a brief period. He returned back to India in 2007 and joined the Dept of Metallurgical and Materials Engg., at IIT Madras as an Asst. Professor. Since 2012, he worked in the same department as Associate Professor and heads the Central XRD Laboratory. He is currently professor of ceramics in the Dept of Metallurgical and Materials Engineering at IIT Madras since 2018. As head of the Central XRD Laboratory he consults a large number of industries both in India and abroad. He has been a visiting Professor at the Christian University of Kiel in Germany, Shanghai Institute of Ceramics in China, European Membrane Institute (University of Montpellier) in France, University of Stuttgart in Germany, University of Bergamo in Italy, St. Petersburg University in Russia. He collaborates with a large number of national and international institutions and organizations. His ongoing & past international collaborations include the Vinca Institute of Nuclear Sciences in Belgrade, Serbia, University of Montpellier in France, IFW Dresden, TU Darmstadt, University of Stuttgart & University of Cologne in Germany, Japan Advanced Institute of Science and Technology (JAIST), Nagoya Institute of Technology and St. Petersburg University in Russia. He has been a recipient of the following awards/honors:

- **Institute Research and Development Award (IRDA)** for the year 2015 awarded by the Indian Institute of Technology Madras.
- **Certificate of Distinction** for excellence in teaching during the International Teaching Week at Hof University of Applied Sciences, Germany in June 2013.
- **Young Faculty Recognition Award (YFRA)** for the year 2012 awarded by the Indian Institute of Technology Madras.
- **IEI Young Engineers Award - 2010** in Metallurgical and Materials Engineering discipline from the Institution of Engineers (India).
- **Young Scientist Award (Dr. R. L. Thakur Memorial Award - 2008)** from the Indian Ceramic Society, India
- **Acers Global Ambassador Award** from the American Ceramic Society.
- **IIM Start-up-Jury Appreciation Award** for the start-up Ceratattva Innotech Pvt Ltd.

His professional experience includes working for ISRO Satellite Centre in Bangalore, Dept of Space, Govt of India. He has published more than **130 peer-reviewed international papers** and delivered several prestigious invited lectures in India, Europe and US. Prof. Ravi Kumar has executed several sponsored projects funded by various agencies of the Govt of India and coordinating several projects as principal investigator & co-investigator. He is currently executing multilateral BRICS project with St. Petersburg University & Ioffe Institute in Russia, bilateral projects with University of Cologne in Germany & Vinca Institute for Nuclear Sciences, Belgrade. His research interests include development of novel non-metallic & inorganic materials whose properties can be tuned on an atomistic scale which includes thermal management, catalysis and energy.

He teaches mechanical behavior of materials, brittle fracture and indentation mechanics, materials under extreme environments, X-ray diffraction techniques and deformation & failure of materials for graduate & undergraduate students.

At present he is leading a team of > 10 people in his lab and also headed the Dept of Metallurgical and Materials Engg., at IIT Madras from 2020 till 2023.

Editorial board (6 journals):

Scientific Reports (Editor), Surface Innovations (Editor), Advances in Materials Science and Engineering (Associate Editor), Transaction of the Indian Ceramic Society (Editor), Frontiers in Materials: For ceramics & glass: (Associate Editor), Transactions of the Indian Ceramic Society (editor), Transactions of the Powder Metallurgy Association of India (PMAI), Open Ceramics (editor of two special issues on electrospinning of fibres and polymer derived ceramics)

Membership of professional bodies:

American Ceramic Society (Life member)
ASM International (Life member)
Serbian Ceramic Society (Honorary member)
Indian Institute of Metals (Life member)
Indian Ceramic Society (Life member)
Secretary, Southwest India Chapter, American Ceramic Society
<https://ceramics.org/sw-india-chapter/>

Establishment & co-ordination of centre of excellence:

Under the institution of eminence (IoE) scheme, Prof. Ravi Kumar is part of the new “Center of Excellence in Materials and Manufacturing for Futuristic Mobility” with a budget overlay of close to Rs. 12.5 crores and is the lead co-ordinator for the Ceramic Technologies Group and continues to lead the group in Phase-II. Under the [Institute of Eminence \(IOE\)](#) initiative, [Center of Excellence on Materials and Manufacturing for Futuristic Mobility](#) has been established at IIT Madras. One of the verticals of this center is geared towards developing Ceramic Technologies and providing innovative solutions paving way for revolutionizing the concept of **Futuristic Mobility (CTFM)**. The center has been created by uniquely combining expertises from various science and engineering departments of IIT Madras and abroad. Our colleagues from Fraunhofer Institute for Ceramic Technologies and Systems IKTS and University of Cologne join the team to drive our experimental research based on first principle calculations and with machine learning approaches. With participation from leading international scientists in the center, we hope to ensure a truly international research environment and building up an innovative global hub dedicated to transformative ceramic science and technology for futuristic mobility.

Ceramic Technologies for Futuristic Mobility: <https://ctfm.in>

Entrepreneurship: Incubation of start-ups:

Professor Ravi Kumar has incubated two start-ups in the IIT Madras Research Park and the details are provided below.

[Ceratattva Innotech Pvt Ltd.](#), focuses on developing specialized preceramic polymers for advanced ceramic materials. The start-up has already come out with a preceramic fibre spinning machine which works on the principle of centrifugal forces, called the [ultraspinner](#) which will be an alternative to the electrospinning process. This is the [first start-up from our department](#) which has been incubated in IIT Madras Research Park, with faculty members/PhD student/Postdoc all from the Dept of Metallurgical and Materials Engineering at IIT Madras taking the lead in the core area of ceramic materials.
Ceratattva Innotech Pvt. Ltd: <https://ceratattva.com>

[InsituMicron Pvt Ltd.](#), specializes in building small scale mechanical testing equipment that can also be integrated with materials characterization equipment in situ characterization while undergoing deformation. **InsituMicron Pvt Ltd.:** <https://insitumicron.com/>.

References:

Prof. Rajendra K Bordia (President of American Ceramic Society, 2024), Dept of Materials Science & Engineering, Clemson University, USA. Email: rbordia@clemson.edu URL: <https://www.clemson.edu/cecas/departments/mse/people/faculty/bordia.html>

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