

Prof. Dr. phil. Anna Margaretha Horatschek
Kiel University, Germany

CV

Anna Margaretha Horatschek is Professor and Head of the English Department at the Christian-Albrechts-University Kiel, Germany, where she holds the chair for English Literature (since 2000). She obtained her academic degrees from the University of California, Berkeley, USA (A.B. 1978), from the German Universities at Freiburg (PhD. 1987) and Mannheim (Habilitation 1995), and taught for one year as an exchange professor in Washington D.C., USA (1998). She is member of the German Academy of the Sciences and Humanities in Hamburg, Germany (since 2010). Her research interests focus on identity and alterity constructs with relation to gender, ethnicity and religion, on knowledge formation, ethics, epistemology, representation, mediality, and on historically and culturally specific models of consciousness.



Methodologically she is informed by literary theory (discourse analysis, deconstruction) and psychoanalysis (Freud, Lacan, Kristeva). She has published various articles and several books on postmodern American Literature, Shakespeare, Victorian novels, British Modernism, IndoEnglish historiographic metafiction, and the spatial turn.

Title: Competing Knowledge Formations in Peter Ackroyd's *Milton in America* (1996)

John Milton (1608-1674), one of the most well read scholars of the Early Modern Period, is also one of the most important poets of British Literature. His epic *Paradise Lost* (1667) addresses urgent epistemological and political issues of his time, namely the truth claims of the new sciences against the medieval faith in Christian doctrines, and the legitimation of religious, political and scientific authority. Peter Ackroyd's novel *Milton in America* (1996) reads the texts and the character of John Milton from the perspective of postmodern philosophy, thus drawing on a contemporary model of knowledge production and legitimatization, which has significantly transformed the hermeneutic methodology of the humanities in Europe and the USA during the 20th century. The lecture will outline, in which way the historically specific models of knowledge production define the relationship between individual experience, cultural discourses, representation, and the legitimatization of truth claims in radically different ways.

**Dr. Lowleen Malhotra, Department of English Studies
Dayalbagh Educational Institute, Agra, India**

CV

Lowleen Malhotra, Ph.D.(1999), DEI, joined the Department of English Studies, DEI, as Asst. Professor in 2012. She holds a vast experience of teaching technical courses like Professional Communication, Personality Development, and Spoken English Skills through Language Lab. to Engineering, BCA, and MBA students. She has attended a number of National and International Conferences in India and abroad; has published articles and chapters in books on Australian Literature and recently co-authored a Self-Learning Guide to Spoken English. Presently she is actively involved in the Distance Education Programmes of the institute. Her research interests focus on Indian English Literature, Australian Drama, and Consciousness Studies.



Title: Consciousness and the Spells of Creative Literature

The aim of this paper is to analyse how Literature, through the genre can awaken the inner or Higher consciousness by kindling the mind and soul of its reader or audience. *Vedanta* deals with the nature and relationship between the manifest world, the individual self (Atman) and the Ultimate reality. The *Jeeva* is the embodied self; its consciousness is limited by mind, intellect, senses and body. The knowledge which is achieved through the senses is *aparvidya* and that obtained through the higher senses as *paravidya*. The essence of true Indian Tradition both in Literature and Life is to develop a complete man whose senses on the physical plane, wisdom on the mental plane and the spiritual faculties, all work in unison to awaken these latent powers. Literature is a creative art. A poet's heart is like a creative medium where the mysteries and truths lurking within the material (phenomenal) world comes out as revelations; the poem itself becomes a creative force. Similarly, a theatre activates human consciousness through its embodiment of thoughts in performance. The physical theatre promotes non-physical thoughts by connecting the two realms on stage. Thus, Literature ushers an experience of the elevation of Consciousness.

**Dr. Malvika Gupta, Department of English Studies
Dayalbagh Educational Institute, Agra**

CV

Malvika Gupta, Ph.D. (2012), Indian Institute of Technology (IIT-Delhi); M.A. (1993) and B.A. (1991), Temple University, Philadelphia, Pennsylvania, recently joined the Department of English, D.E.I. Her research interests are in systems theory and literary analysis and interdisciplinary studies in cognition, literature, language and consciousness. She has published papers in international and national journals and presented papers in national and international conferences. She writes fiction and poetry. Her short story was recently published in the renowned literary ejournal, MUSE India, in their 10th anniversary special issue on “Indian Literature Today” (Issue 59: Jan.-Feb. 2015). She was conferred the national award, “Young Systems Scientist Award 2011” by the Systems Society of India as “a young flag-bearer of the systems movement for outstanding contribution to Literary Systems”. She is a part of the editorial board of the international academic journal *Literary Paritantra (Systems)* and a life member of the Systems Society of India.



Title: Systems Theory and Literary Analysis: The Second-Generation Indo-American Fiction of Jhumpa Lahiri, Rishi Reddi and Shauna Singh Baldwin

Employing systems theory in the analysis of literature, aids in holistically viewing the literary process as being a dynamically interrelated and interconnected one. By understanding the system of interactions between author, text, reader and environment a larger perspective is gained. In this paper, the genre of second-generation Indo-American authors (Jhumpa Lahiri, Rishi Reddi and Shauna Singh Baldwin) and texts is examined using this perspective to unearth new and emergent findings.

The fiction of Jhumpa Lahiri (*Interpreter of Maladies*, *The Namesake* and *Unaccustomed Earth*), Rishi Reddi (*Karma and Other Stories*) and Shauna Singh Baldwin (*English Lessons and Other Stories* and *We are not in Pakistan*) reveals that, in spite of their being writers from different sub-cultural backgrounds, their works, when read together as a system, are interestingly interlinked in terms of themes and characters. By employing both close reading and distant reading (Pascale Casanova and Franco Moretti), shared character-types, which are otherwise unseen, become visible, and when joined and placed in the space of a visual literary map, all three authors' characters and their related stories are shown to exist as a unified whole.

Prof. Dr. Jutta Zimmermann

Kiel University, Germany

CV

Jutta Zimmermann studied English and German at the University of Freiburg and York University in Toronto. She obtained her doctoral degree at Albert-Ludwigs-University Freiburg and her postdoctoral degree (Habilitation) at Friedrich Schiller-University Jena. After a year as Visiting Professor at the University of Mississippi in Oxford, she taught at the universities in Freiburg, Munich, and Bayreuth. Since 2008, she has been Professor of North American Studies and Director of the Center of North American Studies at Christian-Albrechts-University, Kiel. Her teaching and research focus on multicultural and ethnic literatures, gender, regionalism, cultural memory and comparative North American Studies. Among her publications are books on Canadian metafiction and on the function of dialogue in American realism as well as articles on various Canadian and American authors. A recent project entitled “Atlantic Islands in the Americas” traces the intersections of postcolonialism, spatial theory, and island studies.



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Title: North American Dreamers: Cosmopolitan Visions from the Indian Diaspora

In her 1997 essay “American Dreamer”, Bharati Mukherjee invokes the universal ideals of the American Revolution. Embracing the American Dream constitutes a strategic political intervention in the multiculturalism debates of the 1990s. Mukherjee takes the US to task for not having extended the rights to “all its citizens equally”.

The universality of values is a highly contested issue. For postcolonial critics such as, for example, Arun Mukherjee the universal is nothing but „a convenient shorthand for a person who does not want to come to terms with the ... diversity of cultural modes as well as differences of race.“ Cosmopolitan philosophers like Kwame Anthony Appiah argue that Enlightenment philosophers are at fault not because they believe in „the universality of reason“, but rather because „they were so dismally unimaginative about the range of what we have in common.“

Taking my cue from Appiah’s argument that people learn about diversity and the intersection of diverse reactions to the world through stories – novels and films in particular – I will discuss Bharati Mukherjee’s novel *Jasmine*, Michael Ondaatje’s *The English Patient* and Mira Nair’s film *Mississippi Masala* as stories that imaginatively explore the tension between universalist ideals of equality and freedom and the realities of oppression on account of ‚race‘, gender, ethnicity, and nationality.

**Dr. Namita Bhatia, Department of English Studies
Dayalbagh Educational Institute, Agra, India**

CV

Dr. Namita Bhatia, Ph.D. (2001) is Assistant Professor of English Studies at DEI. She obtained her academic degrees from DEI (M.A. 1997, Ph.D. 2001 and PG Dip. in Theology 2009). Before joining DEI in 2013 she taught for nine years at SBN Girls PG College, Jaipur. Her teaching and research focus on Indian Poetics, Indian Mysticism and Philosophy, Literary Criticism and Business Communication Techniques. Her latest book, *A Critical Analysis of Eliot's Poems*, interprets Eliot's Poems applying *Dhvani* theory of Indian Poetics propounded by *Ānandavardhana*. She has presented research papers in various National and International Conferences. She has been to Arizona, USA for her research presentations at the International Conference 'Toward a Science of Consciousness', Arizona, USA in 2012 and 2014.



Topic: The Waste Land- A Dhvanikāvya of Moral Rejuvenation

The theory of *Dhvani* or Suggestion was first introduced by *Ānandavardhana* in his treatise *Dhvanyāloka* in the ninth century. It is a comprehensive principle which can cover any genre that fulfils the definition of poetry and in fact when the Indian poetics adopts the term, it includes any literary work. The activity of suggestion in literature, whether in the East or in the West, has been an age-old phenomenon. Only that its conscious usage in West both as a term and as a technique, was a later development. *Ānandavardhana* and Eliot, as such, have much in common to say. They both profess the theory of suggestion, may be in different terms. Eliot's analysis of the emotional motif of *Hamlet*, like his definition of objective-correlative is very much in consonance with the *Rasa-dhvani*. In "The Waste Land" Eliot is dealing with the themes of futility, frustration and the spiritual and the physical barrenness of the twentieth-century western civilization. However, the poem is not merely a cry in the wilderness over something past and gone, for it ends with a note of hope and belief that by obeying the triple commands of *Prajāpati* man can rehabilitate his lost glory. An overall survey of Eliot's poem reveals that the dominant factor here is the suggestion of *Rasa* which has been assigned the highest place in Indian Poetics. This is a moment of detached relish of aesthetic emotion and this presentation attempts to show how the various stylistic devices can be used for the evocation of this emotion. Since Eliot is a symbolist, there is no dearth of such devices in his poetry.

**Dr. Shashi Srivastava, Department of English Studies
Dayalbagh Educational Institute, Agra, India**

CV

A product of the prestigious Dayalbagh Educational Institute, Shashi Srivastava received her Doctorate's degree in English in 1998. Having her schooling from the Convent schools, she joined St. Conrad's Intermediate College, Agra as English Teacher. She contributed significantly, in imparting not only the academic but also helped in the literary and cultural activities. By the Grace of Almighty, she got an opportunity to serve her *alma mater* as Assistant Professor, in the year 2011. She has been taking English Language classes of B.Tech and BBM; Literature to the Undergraduates and the Postgraduates.



Title: Tagore's 'Geetanjali': An Invocation for the Ultimate

This paper is about the inspiration and the solace that we derive from the famous poem "Geetanjali", composed by the Noble Laureate Indian poet, Rabindranath Tagore. Geetanjali (1912), a collection of his poems, inspires us to awaken our consciousness. In the turmoil of the present day, where people are craving for peace of mind, such a poem can enlighten us to lead a fruitful life—performing our duties towards ourselves, our community, our nation, and above all, towards the Almighty, righteously. Ignited by consciousness, people would be able to work for perfection in the clear light of reason leaving aside all superstitious rituals, beliefs and narrow-mindedness. It would be a nation where everyone within the fold of the brotherhood; the universality of outlook and an abiding passion for the realization of great human ideals would strive for perfection and attainment of the ultimate goal of life.

Prof. Dr. Anja Pistor-Hatam
Kiel University, Germany

CV

Anja Pistor-Hatam, Ph.D. (1991), Freiburg University, habil. (1999), Heidelberg University, is Professor of Islamic Studies at Kiel University. She has published various books and articles on Iranian intellectual history and Shiite pilgrimage. Her latest book *Historiography and the History of Meaning in Iran: Historical Narratives on Mongol Invasions and Rule, 1933-2011* was published by Brill (Leiden) in 2014. Professor Pistor-Hatam is currently working on a research project on minority formations in the Islamic Republic of Iran. She is a member of the Academy of Sciences in Hamburg, member of the advisory board of the Austrian Academy of Sciences and was elected vice-president of Kiel University in June 2014.



**Title: Concepts of incomprehension and defensiveness in the Islamic Republic of Iran:
The creation of “religious minorities”**

This paper looks into the *construction* of majorities and minorities in the Islamic Republic of Iran, especially in regard to religion. In order to do so, I will employ a new theoretical approach that engages in negative hermeneutics or, as it is also called, anoesis. Whereas hermeneutics aim at *understanding*, or even at “the proper understanding” of all kinds of manifestations of human culture, negative hermeneutics, on the contrary, enquire about the normalcy of *nonunderstanding* or incomprehension, in order to be able to recognise all forms of misunderstanding, misconception, or the intention of not wanting to understand and not wanting to be understood, respectively.

If we take a look at today’s Iran, its different ideologies and perceptions of history, its judgment of diverse populations as well as the state and the majority it possibly represents vis-à-vis its minorities, we most likely come to the following conclusion: The relationship between the Iranian state and its “religious minorities” is strongly shaped by lack of understanding, incomprehension, misunderstanding, unintelligibility, and defensiveness. At least in the case of state-approved strategies in regard to “religious minorities”, it is highly questionable whether any effort is being made to seek understanding at all. Incomprehension may be a consequence of taboos and of conflicting paradigms. Being part of an ideological concept, it might also be purposeful. Yet, in order not to misunderstand the Iranian discourse, we have to be aware of the many official and unofficial discourses conducted in the Islamic Republic simultaneously.

**Dr. Vishal Sahni, Coordinator, Centre for Consciousness Studies
Dayalbagh Educational Institute, Agra, India**

CV

Dr. Vishal Sahni is Associate Professor in Faculty of Engineering at Dayalbagh Educational Institute and Chair of Excellence in Quantum Information and Consciousness at Quantum-Nano Systems Centre and Centre for Consciousness Studies of DEI. He obtained Bachelor's degree in Electrical Engineering in 1999, M.Tech. in Engineering Systems in 2001 and Ph.D. in Evolvable Hardware Systems in 2004, all from Dayalbagh Educational Institute. He has been recipient of President's Gold Medal of Dayalbagh Educational Institute twice in 1999 and 2001. His research interests are quantum and nano computing. He has authored a book entitled "Quantum Computing" published by McGraw Hill and co-authored another two books on Nano Computing and Quantum Information Systems. He is the Coordinator of the Memorandum of Understanding between DEI and University of Waterloo.



Abstract: Integrating Eastern and Western Perspectives of Consciousness (Promoting appreciation in the language of the western scientific world of the rich experiential approaches and language (संस्कृत) of the sages of the East)

"Truth – the goal of science, Ultimate Reality – the goal of philosophy, and God – the goal of Religion, are but three names of the same Supreme Essence".

- Sir Sahabji Maharaj, Founder of Dayalbagh and Fifth Revered Leader of Radhasoami Faith

Dayalbagh has been a liberal advocate of adopting modern scientific techniques to study of the teachings of the sages of the East, over a century and we adopt all the rigour of science to study spiritual phenomena. The deep spiritual experience of the sages of the East has always been appreciated by the Western world. However, there have existed, at the most, one or two individuals with spiritual experiences of the highest order, in the world at a time. The Eastern Philosophical aphorism "Satyam-Shivam-Sundaram" captures the triad of consciousness of the grand macro / micro-cosmology.

The approach adopted to study of consciousness at Dayalbagh Educational Institute is based on the modern scientific thought that consciousness appears to be a phenomenon connected with fractals in mathematics rather than having a Gaussian distribution. It is more like a pink noise and it follows some kind of a *power law of consciousness*. Discovery of second order laws is needed to study abstraction of the spiritual world. We have come up with a preliminary power law of consciousness (based as a combination of analytical, experimental

and experiential approaches) through appropriate measurements (of brain-scans of MEG in an indigenously developed facility at DEI) by wedding abstraction with neuro-science reality.

The formulation of power law of meditational consciousness requires invoking a family of models based on Omni quantum theory and physical system theory (including fuzzy analytical hierarchy process), and requisite integration of first person inner experiences of meditationists as co-investigators with the third person scientific methodology of observing, reporting, understanding and hypothesis-testing.

Dr. Dayal Pyari Srivastava, Assistant Professor (Research)
Department of Physics and Computer Science and Quantum-Nano Systems Centre
Dayalbagh Educational Institute, Agra, India

CV

Dr. Dayal Pyari Srivastava is Assistant Professor (Research) at Department of Physics and Computer Science and Quantum-Nano Systems Centre, Dayalbagh Educational Institute. She obtained her Bachelor's degree in Physics and Master's degree in Electronics from DEI in 1985 and 1988 respectively. She obtained M.Phil. in Electronics from DEI in 2009 and was awarded Director's Medal for highest marks in the course. She obtained her Ph.D. on the topic "Graph Theoretic Quantum Field / System Modelling for Quantum Information / Computation Circuits and Algorithms" as a joint research scholar between DEI and IIT Delhi in 2013. One of her invited papers was published in the Special Issue on Quantum Computing Reviews of Journal of Indian Institute of Science, Bangalore and two others in the International Journal of General Systems. She has authored the cover story in Computer Society of India (CSI) Communications: Special Issue on Quantum Computing, published in February 2015. She has co-authored a book entitled "Quantum Information Systems" published by McGraw Hill Education. Her research interests include field graph modelling of quantum systems and theory of many things.



Title: Graph Theoretic Quantum Systems Approach to study Consciousness during perception of Beauty in Maths, Science and Art

Scientific attempts to explain consciousness usually hinge on the study of human brain. Therefore, modelling of human brain holds high potential for advancement in our understanding of the brain and its functions. However, models based on bio-inspired systems approach suffer from the limitation that they are based on physical reality and are classical in nature, with little scope for explanation of the abstract.

The classical model of human brain (SPAUN) developed by Chris Eliasmith and his team of researchers at the University of Waterloo can handle simple tasks like drawing and writing, but does not seem to hold the promise to explain consciousness associated with the brain. It can never simulate consciousness at higher level. On the other hand, models based on quantum biology, quantum physics, mathematics or an integrated approach of these are more successful. Quantum physics uses mathematics, which is suited to deal with higher level of abstraction. Penrose and Hameroff's Orchestrated Objective Reduction Theory, which is grounded in mathematical explanation of the activity of microtubules presents a plausible explanation of proto-consciousness.

Both mathematics and beauty are abstract in nature. To capture abstraction, we need sophisticated theories like string theory, quantum field theory etc. in which gravity can also be unified along with the rest of the forces. At DEI, we are conducting experiments to apply the

graph theoretic quantum system model of the human brain developed by us which is based on mathematics to explain the abstract functions of the brain. We have used the SQUID device (MEG device) to find the peak resonant frequencies of different individuals while they were asked to evaluate beauty in various spheres like mathematical equations, molecular structures in chemistry, parts of poetic verses in English etc. Perception of beauty in other fields is also being studied. The aim of the research is to study abstraction which is a measure of consciousness.

In the physical plane, we have used frequency as the stimulus which is also justified by sampling theory of signals and systems for identifying or perceiving beauty as a cognitive response. In the cognitive domain of mind, we respond with knowledge or consciousness of beauty, while in the highest spiritual domain, we can identify it as a beauty, truth or ultimate reality (*Satyam, Shivam, Sundaram*). It is an approach which deals with systems based on concrete reality through semi-abstract cognitive systems to highly abstract quantum field theory based systems.

**Dr. Shiroman Prakash, Department of Physics and Computer Science
Dayalbagh Educational Institute, Agra, India**

CV

Shiroman Prakash is an Assistant Professor in the Department of Physics and Computer Science at DEI. He completed his Ph.D. in theoretical physics at the Tata Institute of Fundamental Research in 2012 under the guidance of Prof. Sandip Trivedi. His research areas include quantum field theory, general relativity and string theory. Recently he has been devoting much of his time to quantum information and computation.



Title: Graph Theory and Quantum Probabilities

Quantum mechanics is perhaps the most successful physical theory of all time -- it has passed every experimental test it has been subjected to, and represents the present state of the art in physicists' attempts to understand nature. Quantum mechanics is substantially more abstract than its falsified classical predecessor which describe an objective reality steadily evolving in time like clockwork. While the precise interpretation of quantum mechanics is a matter of debate, at a pragmatic level, quantum mechanics is essentially an abstract mathematical framework for calculating probabilities (for the various possible results of experiments we choose to perform).

When you observe say, a particular component of the angular momentum of an atom, quantum physics seems to suggest that nature chooses the answer “on the fly.” Many physicists, most notably Einstein, were unhappy with this, and believed that there must be some unknown theory underlying quantum mechanics – a hidden variables theory – in which physical quantities have pre-existing values prior to our observations. We now know that, non-contextual hidden variables theories reproducing the predictions of quantum mechanics do not exist thanks to some famous theorems of Bell, Kochen and Specker and a great deal of recent follow up work clarifying and generalizing their results. For a classical probabilistic theory to reproduce the predictions of quantum mechanics, the theory must assign values to elements of an ensemble that are context-dependent -- analogous to how the color of a chameleon is dependent its surroundings. This difference is subtle, but potentially very powerful, and seems to be responsible for the exponential speedup provided by quantum computers over classical computers for certain problems.

This talk will describe how a graph theoretical generalization of the Kochen-Specker Bell theorems (recently developed by Cabello, Severini and Winter) can be used to provide insight into when and how quantum probabilities allow for faster computation. The graph theoretical generalization also suggests how quantum probabilities may be used to model diverse systems whose behavior is context dependent.

**Dr. K. Soami Daya, Department of Physics and Computer Science
Dayalbagh Educational Institute, Agra, India**

CV

Dr. K. S. Daya did her Ph. D. in 2002 from the Dayalbagh Educational Institute on Microwave Studies of High Temperature Superconductor and its Applications in Frequency Standards. Prior to joining the Dayalbagh Educational Institute as Assistant Professor in 2007, she served as RF R&D Scientist at Nokia Siemens Networks India (2006), Project Scientist at Indian Institute of Technology Delhi (2004) and Post Doctoral Fellow at Forschungszentrum Jülich, Germany (2002). Her research interests are, affordable microwave technologies for healthcare and communications. Her specific interests are, understanding the electrical properties of biological materials and other novel materials at high frequencies, dielectric imaging and designing metamaterials for imaging applications. Recently she has been engaged in developing pathways for fostering innovation and entrepreneurship in students and tapping incremental innovations in the rural zones for developing socially relevant enterprises.



Title: Skill Building Pathways to Innovation and Entrepreneurship @ DEI

This paper unfolds the DEI's model for entrepreneurship and skill building to groom young students as creative, self-reliant and enterprising individuals. The Skill development programme in DEI started as Technical School in 1927 with the objective of training students on vocational skills for better employability in industries. But the educational system of DEI realized the hidden advantage of early year skill development in students, and university-wide compulsory core courses were introduced in 1976. The framework of education at DEI gives students, well-structured opportunity to work with their own hands for incremental skill generation, alongside the main education from the primary level. This experience of early year skill building has been transformed to a pan-India initiative through the distance education programmes, where focus is on the upliftment of youth and women in the rural zones by giving mentored vocational courses and creating resource centers (workshops) around the skills and trades being practiced in a rural zone.

With the beginning of vocational degree programmes in food processing and apparel manufacturing, skill-building initiatives in DEI have taken a different dimension. With a new objective of grooming future innovators and creative leaders, now DEI has created the right ecosystem to make the students job enablers. DEI envisions to create common workshops equipped with different facilities to encourage students to bring out their creative acumen and to come out with innovative marketable ideas. These ideas can be incubated in these common workshops under well-experienced mentors. By-Student-For-Student enterprises run by the student on the campus give students an experimental business launch pad to understand the business planning, marketing strategies and assessment of future market projections. Presently Catering & Food Processing (ADyNaM Foods) and Garment & toy (ATMA) manufacturing enterprises and Automotive and Multiskill Garages (AAM Garages) have been started on the campus and at remote rural areas of Madhya Pradesh. We also envision starting technology incubators in near future.

**Dr. Bani Dayal Dhir, Department of English Studies
Dayalbagh Educational Institute, Agra, India**

CV

Dr. Bani Dayal Dhir is Assistant Professor in the Department of English Studies, Dayalbagh Educational Institute (Deemed University) Agra, India. Her primary research interests include literary theory, Systems Theory and Consciousness studies. Her research endeavours explore the application of Generalized Physical Systems Theory Modeling, Interpretive Structural Modelling, Quantum Theory and science of consciousness in the analysis of literature. Some of her notable contributions include “Graph Theoretic Field Modeling for Multi- Dimensional Literary Systems” (M.Phil. dissertation), “A Study of Emergentism and High End Complexity in Complex Literary Systems” (Ph.D. thesis). In recognition of her contribution to research in Systems Theory and literature, the Systems Society of India honoured her with National Young Systems Scientist award at the Joint International Conference on Applied Systems Research (ASR) and XXXIII National Systems Conference in 2009. She has presented papers at various international and national conferences and won several best paper awards. She has presented papers at Toward a Science of Consciousness, Arizona, USA consecutively for 3 years. Her recent paper presented at Arizona was “Formulating Generalized Metarationalistic Model of States of Consciousness and Seasonal Rhythm : A study with reference to Oriental Radhasoami Spiritual Philosophy, Christianity and Cultural Anthropology.” She has to her credit several research publications in international journals like *International Journal of General Systems* , *Literary Paritantra (Systems) : An International Journal on Literature and Theory*, *Paritantra : A Journal of Systems Society of India*, *Consciousness, Literature and Arts*; *Lincoln University UK* etc. Her poems have also appeared in magazines and journals. She was the co-convenor of the esteemed conference Toward a Science of Consciousness-2013 held at Dayalbagh Educational Institute, Agra, India. She is Associate Editor of *Literary Paritantra (Systems): An International Journal on Literature and Theory*, coordinator (i-c-n-c-)TALL, DEI, Joint Coordinator Center for Consciousness Studies, DEI and life member of Systems Society of India. She was the coordinator of East –West Forum at TSC 2014 held at Center for Consciousness Studies, Arizona, USA.



Title: Literature, language and Science of Consciousness: Triple Hierarchies of Research

Humans are born with a language instinct, which Noam Chomsky calls the LAD (language acquisition device). If language is a ‘structured multilevel system’ which is central to all disciplines, consciousness is the most essential requisite for the existence of language and literature, their use and acquisition. The observation of Max Plank may be recalled here, “I regard consciousness as fundamental. I regard matter as derivative from consciousness. We

cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.” There exists a very close nexus among language, literature and consciousness as all three operate at three levels- physical or biological, psychological and metaphysical. These three levels, though distinct, are connected to one another.

The recently established (Information-Communication-Neuro-Cognitive-) Technologies Assisted Language Lab at DEI facilitates interdisciplinary research at all three levels to generate a holistic understanding. Consciousness pertaining to pure physical plane will be explored from linguistic and literary perspectives through research in Neurolinguistics which involves attempting to combine theory from neurology/neurophysiology (how the brain is structured and how it functions) with linguistic theory (how language is structured and how it functions). Neurolinguistics is an interdisciplinary enterprise which includes the humanities, medical, natural and social sciences, as well as technology. It takes within its purview aspects related to language acquisition, language processing and language impairment. With the assistance of MEG, EEG and fMRI various experimental techniques are evolved to explore the physical functioning of brain and how it encodes language. Such an initiative has already been taken at DEI. Research in this realm is going on across the globe too, but at DEI neurolinguistic and neurobiological endeavours are being linked to consciousness studies as well as literary studies.

At the second level comes Psycholinguistic studies which generate insights pertaining to middle cognitive order where consciousness takes the form of cognitive knowledge or intelligence. Psycholinguistics covers the cognitive processes that make it possible to generate a grammatical and meaningful sentence out of vocabulary and grammatical structures, as well as the processes that make it possible to understand utterances, words, text, etc. Neurolinguistic Programming (NLP) and Altered States of Consciousness fall within the purview of this middle cognitive order of consciousness. Consciousness here rises above gross physicality, becomes subtle and abstract.

The highest level of consciousness is Profound Transcendental consciousness, Spirit consciousness, which resides in pure abstraction as the Supreme Being is Formless-Param Sat Chit Anand. Here knowledge takes the form of enlightenment of the spirit, one realizes the Supreme Truth, beauty and intelligence. Linguistic and literary studies at this level become philosophical and theological. It would not be out of place to mention that these days Theolinguistics is becoming an important branch of knowledge.

In literature too there is a hidden process from concretion to abstraction. “Best words in Best order” in a literary composition stimulate the nerve cells, and then begins the process of decoding, cognition, along with evoking emotions and feelings. Literature is a meditative experience, an elevation from physical to metaphysical, which connects to the Central Being as words are not mere words but are a source of inner illumination. The final resultant state in the realm of literature is bliss of realizing truth, beauty and knowledge - Satyam Shivam Sundaram. In Aristotelian terminology it generates a higher cathartic effect, transporting to a higher Metaphysical state of consciousness. At DEI recently an experiment was performed to decipher this process from concretion to abstraction, using MEG with students reciting a variety of poetic extracts.

**Prof. Dr. rer. nat. Anand Srivastav, Department of Computer Science
Kiel University, Germany**

CV

Anand Srivastav is since 1997 Professor for Mathematics at Kiel University, holding the chair for Discrete Optimization. He received the Dr. rer. nat degree from the University of Münster, Germany, with a thesis in Functional Analysis. Thereafter he has been Assistant Professor at the University of Bonn, where he moved to Discrete Mathematics. After research visits as an Assistant Professor at the University of Minnesota, Courant Institute, NYU, Yale University and Humboldt University of Berlin, he completed his habilitation in Computer Science with a stipend award of the German Research Foundation (DFG) at the Free University of Berlin. In Kiel, he has been the speaker of the DFG Research Training Group, Efficient Algorithms and Multiscale Methods (2000 – 2005). Since 2007 he is PI in the cluster of excellence, “The Future Ocean” within the excellence initiative of the German Research Foundation. In 2013 he was awarded the Guest Professorship for Computer Science at the Indo-Max-Planck Center for Computer Science, New Delhi, by the Max-Planck-Society (MPG).



Title: Algorithm Engineering for Big Data Problems

The major bottleneck in many applications in science, engineering, but also industrial problems, is the design of efficient algorithms for hard optimization problems coping with big data. Among them is the problem of genome assembly, a key task in life science. In Germany, the method of Algorithm Engineering has been founded and fostered within the DFG priority program 1307 “Algorithm Engineering”, which was extended with Indo-German projects for two years (2012 – 2014), among them a joint project of Kiel University and DEI. This collaboration continues in the new DFG priority program “Algorithms for Big Data”. In this talk we will introduce the methodology of algorithm engineering, show results jointly obtained with DEI colleagues, and give a brief introduction to the running project of “Algorithmic Foundation of Genome Assembly” within the DFG priority program “Algorithms for Big Data”, in cooperation with the cluster of excellence, “The Future Ocean” (Prof. Thorsten Reusch, Geomar, Kiel) and “Inflammation at Interfaces” (Prof. Philip Rosenstiel, Kiel University).

**Mr. Pavithr Rajanampalle, Department of Physics and Computer Science
Dayalbagh Educational Institute, Agra, India**

CV

Pavithr Rajanampalle is a post graduate in Quantitative Software Engineering from Stevens Institute of Technology (SIT), USA. He was associated with IBM USA, PwC and Coopers & Lybrand to provide software solutions to large complex applications for fortune 500 companies, and to implement systems engineering and project management methodologies for complex information systems as Systems Engineer and Systems Integration Manager in the department of Systems engineering, Architecture and Test Centre of Excellence IBM USA, for about twelve years. He received several awards, including the IBM-STAR performer during his association with IT sector. He also served as a Department Chair at the Department of Computer Science and Engineering at Hindustan College of Science and Technology, Agra. He was also associated with Sharda Group of Institutions (SGI), Agra, as the Head of IT enabled services. He is currently teaching UG & PG students at DEI's department of Physics and Computer Science. His research interests are Value based software engineering, Social Web Engineering, Big Data Analytics, Swarm Intelligence and Evolutionary Algorithms.



Title: Social Evolution: An evolutionary algorithm inspired by human interactions

Social evolution is inspired by complex human interactions and their bias. Generally, selection of individuals for interaction is subjected to the individual's subjective and objective bias. Subjective bias may include the trust, affinity and cooperation where as objective bias may include the quality or fitness.. The individual's bias not only impacts the selection of individuals for interaction but may also influence the interaction model and the outcome of interactions for decision making. Indecisive interactions may drive an individual to seek a second opinion to and collate the results of the interaction with the results of previous interactions in decision making. Humans also maintain records of decisions and analysis, either explicitly or implicitly in memory, which passed on to subsequent generations and which may then influence their social behavior or societies at large. A social evolution (SE) algorithm that attempts to incorporate such human behavior and bias to address dynamic non-linear complex optimization problems is modeled and has been successfully implemented. Further, social evolution concepts have been integrated with some properties of quantum physics to develop a novel quantum inspired social evolution (QSE) algorithm. This talk will outline the impact of human bias in selection of individuals for interactions, the rate of individuals seeking for second opinion and the influence of selective learning on the overall performance of Quantum inspired Social Evolution algorithm (QSE).

**Dr. Sandeep Paul, Department of Physics and Computer Science
Dayalbagh Educational Institute, Agra, India**

CV

Dr. Sandeep Paul is Assistant Professor with the Department of Physics and Computer Science, Dayalbagh Educational Institute, India. He obtained his B.Tech.(Electrical Engineering) from AMU, Aligarh in 1992, M.Tech. (Engineering Systems) and Ph.D. Degree from Dayalbagh Educational Institute in 1995 and 2003 respectively. He has been involved in research in the field of computational intelligence for more than one and half decade and his research interests include modelling of hybrid evolutionary fuzzy neural networks, spiking neural networks, deep learning networks and robotics. Dr. Paul is IEEE Senior Member and he is a life member of Systems Society of India. He is recipient of Young Scientist Award for Systems Theory in 2010 for outstanding theoretical work and application of systems theory. His work is published in IEEE transactions and other journals of high impact factor. He is on the reviewer board of several IEEE Transactions and member of National/International Programme Committee of many conferences. He has been Session Chair and has organized Special Sessions in International Conferences.



Title: Subsethood Class of Computational Intelligence Systems and their Applications

The computational intelligence (CI) paradigm brings together three technologies—neural networks, fuzzy logic, and evolutionary algorithms—and stresses their seamless integration, resulting in numerous important spin-off commercial applications. These systems have the advantage of being able to adapt and operate in dynamic environments where uncertainty prevails.

This talk will review the novel subsethood class of architecturally economical and high performance fuzzy-neural network models with diverse application domains. These models have opened up the possibility of handling both numeric and linguistic inputs simultaneously. Such systems also have the feature of seamless embedding of expert domain knowledge available in the form of linguistic logical rules. In order to deal with large scale problems a parallel implementation with simultaneous search of architecture and estimation of network parameters will be presented.

**Dr. C Vasantha Lakshmi, Department of Physics and Computer Science
Dayalbagh Educational Institute, Agra, India**

CV

Dr. C. Vasantha Lakshmi is working as an Associate Professor in the Department of Physics and Computer Science, Dayalbagh Educational Institute, Agra. She has an M. Tech. in Computer Science from University of Hyderabad, Hyderabad and Ph.D in the area of OCR for printed Telugu text from the Dayalbagh Educational Institute. She was awarded the ISCA Young Scientist Award for this work. She has also proved her research credentials by publishing a number of papers in various Journals and Conference proceedings and received several awards. Her research interests are broadly in the area of Pattern recognition, Image Processing, Soft computing and evolutionary optimization. She has handled several research projects both minor and major from several funding agencies like UGC, Department of Information Technology etc. She is a member of various professional bodies like Indian Science Congress, Systems society of India, IEEE etc. She gave several invited talks at various places including University of Kiel, Germany. She is currently working on a major research project funded by Department of Information Technology on Video watermarking.



Title: Recognition / similarity searching in image patterns under complex conditions with high accuracies

Making a computer read and edit a hard copy of a document just as humans do it has been a dream for long especially for Indian languages. Commercial software performs well on "well behaved" or "OCR friendly" documents. It is a common practice in OCR applications to convert the scanned document image into binary form for easy processing. This fundamental task itself becomes complicated due to multicolored complex backgrounds of the document. An approach for estimating the noisy back ground using wavelets and recognition of characters in complex document images will be demonstrated in this talk.

The problem of handling visual image patterns for identifying confusingly similar images is complicated because of the semantic gap between similarity as perceived by humans and by the software. This is compounded by the vast variety of images whose perceptual similarity from user's point of view is hard to characterize by low level mathematical features alone. Appropriate logic for incorporating these factors in a software model in the context of one lakh Indian trademark images with provision for relevance feedback from the user will also be demonstrated in this talk.

**Dr. Antika Thapar, Department of Mathematics
Dayalbagh Educational Institute, Agra, India**

CV

Antika Thapar, Ph.D. (2010) is Assistant Professor in Department of Mathematics, Faculty of Science, Dayalbagh Educational Institute, Dayalbagh, Agra, since 2011. She completed her Ph.D. (Mathematics) in 2010 from the same institute. Her research area includes fuzzy relational optimization and fuzzy vehicle routing problems. She has successfully completed major research project “Generalized Fuzzy Relational Equations and Fuzzy Decision Models with Application in Industry” as senior research fellow funded by Council of Scientific and Industrial Research (CSIR), New Delhi, in 2012.



Title: A genetic algorithm for satisficing solutions of multi-objective fuzzy optimization problems

In many methods of describing a system it is assumed that there exists a functional relation between the input and the output variables of the system. In many ill-defined processes, decision algorithms may be set up based on numerical and non-numerical (linguistic) kinds of information. One way of modeling such fuzzy systems is by means of fuzzy relation equations. A multi-objective optimization problem with max-product fuzzy relation equations is considered. Since the non-empty feasible domain of such problems is, in general, a non-convex set; the traditional optimization methods cannot be applied. A genetic algorithm to find “Pareto optimal solutions” for solving such problems observing the role of non-convexity of the feasible domain of decision problem is designed in this work. Solutions are kept within feasible region during the mutation as well as crossover operations. Test problems are developed to evaluate the performance of the proposed algorithm and to determine satisficing decisions. In case of two objectives, weighting method is also applied to find the locus of optimal solutions.

**Prof. Kamal Srivastava, Department of Mathematics,
Dayalbagh Educational Institute, Agra, India**

CV

Kamal Srivastava is a Professor in the Department of Mathematics which she joined in 1998 as an Assistant Professor. She obtained her PhD degree from MDS University, Ajmer with a thesis in Special Functions. Her main teaching area is Real Analysis and Functional Analysis. Her research focuses on designing of meta-heuristics for solving optimization problems in graph theory. She has worked on a number of graph layout problems which have many real life applications in VLSI design, graph drawing, networking etc. She successfully completed a major research project “Design and development of meta-heuristics for solving graph layout problems” funded by University Grants Commission (UGC), New Delhi in 2012 as Principal Investigator. She has also successfully completed another major UGC research project as a Co-investigator in collaboration with the Department of Mechanical Engineering, DEI.



Title: On minimizing cyclic cutwidths of graphs using exact and metaheuristic approaches

Graph layout problems are a class of combinatorial optimization problems whose goal is to find a layout of an input graph to optimize a certain objective function. A layout is the embedding of graph G into a host graph H and is defined as a bijective function which maps the vertices of G to the vertices of H and associating a path in H for each edge of G . These problems have been shown to be NP-complete in the general case. In this work, we consider one such problem - Cyclic cutwidth minimization problem (CCMP) which consists of embedding a graph onto a cycle such that the maximum cut in a region is minimized. Exact results have been proved in literature for some classes of graphs such as complete graphs, complete bipartite graphs, hypercubes, 2-dimensional cylindrical meshes and 2-dimensional meshes.

Using layout based arguments, we have proved optimal results of cyclic cutwidth for some classes of graphs such as (m,n) -Tadpole graph, m -book graph, n -sun graph, cone graph, fan graph, crown graph, web graph, friendship graph, gear graph. Upper bounds for king graph, join of hypercubes, toroidal mesh, d -dimensional c -ary cliques, complete split graph and Halin graph have also been obtained. We have also designed a memetic algorithm (MA) for CCMP for which we developed six construction heuristics to generate a good initial population. A solution improvement heuristic is also developed and incorporated into the generational phase of MA. Experiments were conducted to compare the performance of construction heuristics, for selecting operators (local search and crossover) and for parameter tuning. Extensive experiments carried out on the test suite show that MA is able to achieve optimal results for all the classes of graphs for which optimal results are known in the literature as well as for which the optimal results have been proved by us.

**Prof. C. Patvardhan, Faculty of Engineering
Dayalbagh Educational Institute, Agra, India**

CV

C. Patvardhan obtained his BSc (Engg.) degree from DEI in 1987, MTech from IISc, Bangalore in Computer Science in 1989 and his PhD in 1994 from DEI. He has been with the Dayalbagh Educational Institute since 1989 where he is currently Professor, Electrical Engineering and Dean, ICT Centre, MTV Puram. He has been a recipient of President's Gold Medal of the Dayalbagh Educational Institute in 1987. His current research interests are Quantum and Soft Computing and Image Processing. He has been a training consultant on Advanced Algorithms to Cadence Design Systems, NOIDA and Atrenta Communications, NOIDA. He has been a PI/Co-PI of several research and consultancy projects. He has published more than 250 papers in Journals and proceedings of Conferences and received more than 20 Best paper / presentation awards. Prof Patvardhan has an ongoing collaboration with Prof A Srivastav of Kiel University with joint supervision of PhD students at DEI and Kiel. He was the Principal Investigator from India of a DST-DFG sponsored research project on Algorithm Engineering of Quantum-inspired Evolutionary Algorithms.



Title: Quantum-Inspired Evolutionary Algorithms framework for large scale optimization problems

Quantum-Inspired Evolutionary Algorithm (QIEA) is a recent branch of EAs. QIEA is a population-based probabilistic Evolutionary Algorithm that integrates concepts from quantum computing for higher representation power and robust search. It maintains a population of individuals in quantum bits or qubits. A qubit coded individual can probabilistically represent a linear superposition of states in the search space and has a better characteristic of population diversity than other representations.

QIEAs are characterized by population dynamics, individual representation, evaluation function etc., as in EAs, as well as quantum bit (qubit) representation, superposition of states etc. as in Quantum Computing. The advantage of the QIEAs is that, unlike the other EAs, they can work with small population sizes without being stuck in local minima and without converging prematurely because of loss of diversity. In the extreme case, the immense representation power of the qubits enables the use of a population size of 1. This reduces the computational burden and enables the solution of large sized problems.

Although these observations are correct in theory, in practice there are issues of unacceptably slow convergence when QIEAs are utilized for solution of large scale optimization problems. The talk presents an enhanced QIEA framework developed by our group for attempting to resolve these issues.

**Prof. Dr. Jeffrey McCord, Institute for Materials Science
Kiel University, Germany**

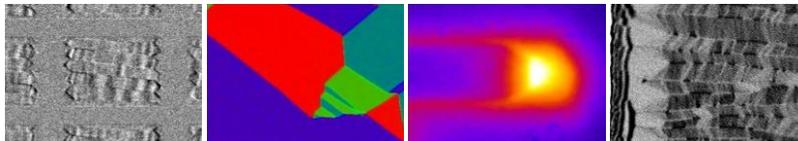
CV

Jeffrey McCord is a Heisenberg-Professor in Materials Science at Kiel University, working on nanomagnetism and magnetic domains. He received his Ph.D. degree from the University of Erlangen-Nürnberg. Prior to joining Kiel University, he was a research and development scientist at IBM Storage Technologies Division, San Jose, working on magnetic recording heads. He worked as a group leader at the Leibniz-Institute for Solid State and Materials Research Dresden and was department head at the Helmholtz-Zentrum Dresden-Rossendorf. His research has been focused on magnetic materials and magnetic domain behavior of magnetic thin films. He is a specialist in magneto-optical domain imaging. He has over 120 publications in peer-reviewed journals and holds several international patents related to imaging and applications of magnetic materials.



Title: Imaging of magnetism by magneto-optical microscopy

Important for the understanding of the origin of magnetic properties and for the technological applications of magnetic materials is the ability to observe magnetic domains and domain wall structures. One common domain observation method is magneto-optical microscopy. The widefield magnetic microscopy technique is based on the Kerr and the Faraday effect. Recent advances and applications of wide-field magneto-optical microscopy will be reviewed. The versatility and possibilities of the method will be illustrated. Examples include regular quasi-static imaging, quantitative dual wave-length domain imaging, as well as dynamic domain imaging with picosecond temporal resolution. Beyond domain imaging, the use of magneto-optical microscopy for the laterally and time-resolved imaging of temperature fields will be demonstrated.



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Dr. K. Soami Daya and Prof. G. S. Tyagi
Department of Physics & Computer Science
Dayalbagh Educational Institute, Agra, India

Dr. K. S. Daya did her Ph. D. in 2002 from the Dayalbagh Educational Institute on Microwave Studies of High Temperature Superconductor and their Applications in Frequency Standards. Prior to joining the Dayalbagh Educational Institute as Assistant Professor in 2007, she served as RF R&D Scientist at Nokia Siemens Networks India (2006), Project Scientist at Indian Institute of Technology Delhi (2004) and Post Doctoral Fellow at Forschungszentrum Jülich, Germany (2002). Her research interests are, affordable microwave technologies for healthcare and communications. Her specific interests are, understanding the electrical properties of biological materials and other novel materials at high frequencies, dielectric imaging and designing metamaterials for imaging applications. Recently she has been engaged in developing pathways for fostering innovation and entrepreneurship in students and tapping incremental innovations in the immediate workplaces and developing socially relevant enterprises.



G. S. Tyagi did his Ph.D. in 1980 from Birla Institute of Technology & Science Pilani, Rajasthan. He joined Dayalbagh Educational Institute, Agra in 1983 and is currently working as a Professor in the Department of Physics & Computer Science at Dayalbagh Educational Institute, Agra. He has published several research papers in national and international journals. His research interests include magnetically tunable devices and electromagnetic band gap structures at microwave frequencies.



Title: Applications of dielectric characterization of materials at high frequency

Materials in the presence of electromagnetic fields produce secondary effects like polarization, conduction or magnetization. Probing into these secondary effects at microwave frequencies have led to many useful applications ranging from novel materials for communication systems to precise and low cost healthcare system. This paper presents few such applications resulting from the interaction of electromagnetic fields with materials at microwave frequencies.

Long penetration depths and lower energies make microwaves an ideal non-invasive probe to understand the biological molecules and their electrical properties. One such application is the non-invasive probing of glucose level in blood. This technique is based on stripline sensor, detects the change in glucose level through resonant method and then optimization is performed through fuzzy c-means clustering approach.

Microtubules, which are an important part of the cytoskeleton have been debated for their dynamic instabilities (polymerization and depolymerization). This paper also demonstrates dynamic instability of microtubules using very high quality factor whispering gallery mode resonators and its dielectric imaging through confocal radar algorithm using the broadband reflection measurements.

In the field of air based communications dielectric ceramics/ferrites have posed challenge to their single crystal counter parts, owing to their low cost, comparable performance and ease in tailoring the dielectric properties. Low loss and high dielectric constant ceramics are enabling the last leg of connectivity in geographically remote zones through ‘standalone networks’ that can be synchronized using temperature compensated ceramics.

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**Prof. Dr. Vibha Rani Satsangi, Department of Physics and Computer Science
and**

**Prof. Rohit Shrivastav, Department of Chemistry
Dayalbagh Educational Institute, Agra**

CV (Prof. Vibha Rani Satsangi)

Prof Vibha R. Satsangi is currently serving as Professor in the Dept. of Physics and Computer Science, Dayalbagh Educational Institute, Dayalbagh, Agra, India. Prof Satsangi is committed to research in renewable energy and is presently involved in the production of hydrogen by solar energy induced splitting of water using nanostructured semiconductors by photo-electrochemical route. Main emphasis is on the modification of the properties of metal oxides using techniques like Swift Heavy Ion (SHI) irradiation, quantum dots sensitization, deposition of Zn dots, use of hetrostructures in different combinations of Fe_2O_3 , TiO_2 , ZnO , BaSrTiO_3 and use of CNT, Graphene to improve their PEC response. She has completed a number of research projects funded by Dept of Science and Technology, University Grants Commission etc. She was one of the investigators in the recently completed prestigious DST-NSF (MWN) collaborative project with University of Maryland, USA on Solar Hydrogen Production. She is also part of DST, India consortium project on the development of pilot plant for Hydrogen generation. Prof Satsangi has published about 75 papers in International and national journals, supervised many PhD's, delivered invited talks and chaired sessions in National and International Conferences in India and abroad.



CV (Prof. Rohit Shrivastav)

Prof. Rohit Shrivastav is currently serving as professor of Chemistry in Dept. of Chemistry, Dayalbagh Educational Institute, Dayalbagh. His research interests are photo-electro-chemical cells for solar-hydrogen generation, nano-materials as photocatalyst in energy conversion and pollution abatement, thermodynamic analysis of environmental processes, and soil and water chemistry of fluoride and toxic metals. Prof Shrivastav has eighty five research articles to his credit. His h-index is 20. He has been involved as investigator in different research projects funded by the Indian Government. Currently, he is working on a DAE-BRNS funded project in collaboration with BARC, Mumbai.



Title: Nanomaterials for solar-hydrogen generation via photoelectrochemical splitting of water

Material science is all set to play an important role in finding viable and long-lasting solution to one of the most formidable challenge of modern time, i.e. a solution to the looming global threat of fuel crisis. Photoelectrochemical splitting of water offers a promising route through which the abundantly available solar energy can be converted to Hydrogen – widely acclaimed as a clean chemical fuel and viable alternative to the conventional fossil fuels. The

most critical component of photoelectrochemical cell is the semiconductor electrode. This presentation deals with the researchers' experience of past twelve years on the most vital aspect of semiconductor material selection and material processing for above application. The presentation would encompass highlights of the ongoing research on nanostructured oxide semiconductors, viz. Fe_2O_3 , CuO , Cu_2O , ZnO and BaTiO_3 , which are being pursued to explore the effects of dopants, swift heavy ion irradiation and bi-layered heterostructures, in an attempt to optimize the efficiency of hydrogen production.