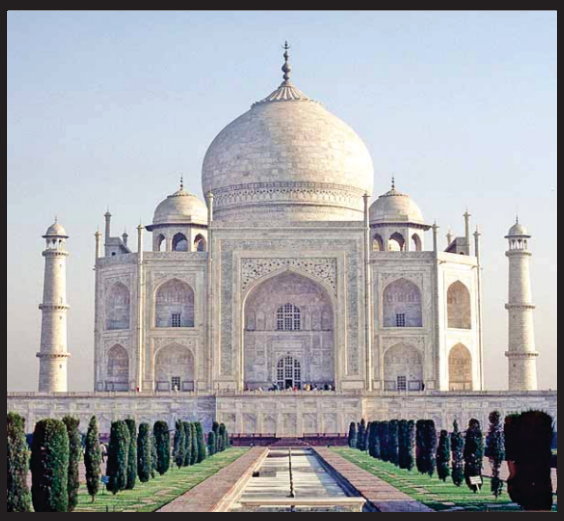
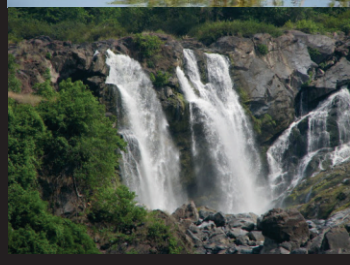
FraMCoS 2019
Bangalore

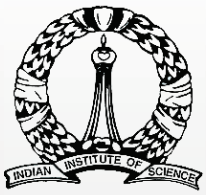
India's Bid For

10th International Conference on Fracture Mechanics for Concrete and Concrete Structures









FraMCoS 2019
Bangalore

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CIMGLOBAL
www.cimglobal.net

Preface: FraMCoS - 10

Fracture Mechanics for Concrete and Concrete Structures was founded in 1992 in USA to promote and advance the theoretical and experimental aspects of Fracture Mechanics and Cracking of Concrete Structures.

The activities of FraMCoS provide great advances on new technological development in concrete materials and concrete structures. Among the important roles of IA-FraMCoS, the primary one is to organize the international conferences on a triennial basis to communicate and compile recent advances on the related subject areas.

Eight versions of FraMCoS have been completed – Breckenridge (USA, 1992), Zurich (Switzerland, 1995), Gifu (Japan, 1998), Cachan (France, 2001), Vail (USA, 2004), Catania (Italy, 2007), Jeju (South Korea, 2010) and Toledo (Spain, 2013). The ninth in the series would be held in the USA during 2016.

I am hereby making a bid to organize the tenth international conference at the Indian Institute of Science in Bangalore, India. The Congress would be conducted as per the standard guidelines of IA-FraMCoS. An international program committee will guide the local organizers in planning the scientific program and technical sessions. Academic institutions, research organizations, construction companies, government organizations, cement companies, construction chemical industries would have a major interest in the proceedings of this conference. It is therefore expected to receive generous sponsorship and support from them.

Conferences & Incentives Management (CIMGlobal) would be assisting in preparing for the conference. CIMGlobal (www.cimglobal.net) is a professional conference organizer and destination management company.

The conference would be conducted using the modern state-of-art technological, and communication tools. The conference is proposed to be held during the first week of August 2019. With this dossier, I would request the members of the IA-FraMCoS to support the organization of the tenth version of FraMCoS conference in Bangalore, India.

J. M. Chandra Kishen

Organisers of FraMCoS 10

Prof. J. M. Chandra Kishen
Professor
Department of Civil Engineering
Indian Institute of Science
Bangalore 560 012, INDIA



Prof. B. K. Raghu Prasad
Former Professor
Dept. of Civil Engineering
Indian Institute of Science
Bangalore 560 012, INDIA



Dr. Sonalisa Ray
Assistant Professor
Dept. of Civil Engineeering
Indian Institute of Technology
Roorkee 247 667, INDIA



Brief CV of Principle Organiser

J. M. Chandra Kishen

Dept. of Civil Engineering, Indian Institute of Science, Bangalore 560012, India | chandrak@civil.iisc.ernet.in
Tel: +91-80-2293 3117 / **Fax:** +91-80-2360 0404 / **Cell:**+919844601830 / http://civil.iisc.ernet.in/~chandrak/

EDUCATION

1992 - 1996	Ph.D. (Civil Engineering), University of Colorado, Boulder, USA • Thesis – Interface Cracks: Fracture Mechanics Studies Leading towards Safety Assessment of Dams
1990 - 1992	M.E. (Structural Engineering), Indian Institute of Science, Bangalore, India • Thesis – A Numerical Model for Fracture of Concrete
1983 – 1987	B.E. (Civil Engineering), University College of Engineering, Bangalore University, India

PROFESSIONAL EXPERIENCE

- Professor (2011 – Present), Associate Professor (2005 – 2011), Assistant Professor (1999 – 2005) and lecturer (1996 – 1999), Dept. Of Civil Engineering, Indian Institute of Science, Bangalore 560 012, India.
- Chairman (2011 – Present), Centre for Scientific and Industrial Consultancy, Indian Institute of Science, Bangalore, India
- Academic Guest June – July 2007 Leipzig University of Applied Sciences, Leipzig, Germany.
- Visiting Faculty April – June 2004 Dept. Of Civil Engineering, University of Colorado, Boulder, USA
- Lead Graduate Teacher 1995-1996 Dept. Of Civil Engineering, University of Colorado, Boulder, USA
- Project Engineer 1988 – 1990 Ranka Constructions, Bangalore, India.

RESEARCH INTERESTS

- Fatigue crack propagation in cementitious materials
  - Plain concrete, Reinforced Concrete, Self Consolidating Concrete and Cold-jointed Interfaces
  - Experimental techniques – Micro and Nano Indentations, SEM, Acoustic emission, DIC
  - Development of Analytical Models – Dimensional Analysis, Thermodynamics
- Fracture behaviour of cementitious materials and cold-jointed interfaces
  - Size effect, Fracture properties
  - Damage detection and quantification
  - Energy equivalence between fracture and damage mechanics.
- Residual Life Assessment of Existing Railway Bridges

TEACHING

- Graduate Courses
  - Solid Mechanics
  - Finite Element Structural Analysis
  - Fracture Mechanics of Concrete
  - Stability of Structures
  - Experimental Methods in Structural Engineering
  - Nonlinear Structural Mechanics
  - Failure Analysis of Structures

DOCTORAL RESEARCH GUIDANCE

1. Sonalisa Ray, 2012, Studies on fatigue crack propagation in cementitious materials: A dimensional analysis approach
2. Hemalatha T, 2012, Studies on characterization of SCC: Microstructure, fracture and fatigue
3. S. G. Shah, 2010, Fracture and fatigue behaviour of concrete-concrete interfaces using acoustic emission, digital image correlation and micro-indentation techniques.
4. Khandelwal, R., 2008, Studies on the evaluation of thermal SIF for bi-material interfaces
5. Sain, T., 2008, Fracture mechanics based residual strength assessment of concrete members under fatigue
6. Rao, P. S., 2007, Fracture behaviour of jointed concrete interfaces.

RECENT PUBLICATIONS (Last Six years)

1. Pervaiz Fathima, K. M. and J. M. Chandra Kishen, 2013, "A thermodynamic Framework for fatigue Crack Growth in Concrete", International Journal of Fatigue, Vol. 54, pp. 17 – 24, doi:10.1016/j.ijfatigue.2013.04.007.
2. Sonalisa Ray and J. M. Chandra Kishen, 2013, "Analysis of Fatigue Crack Growth in Reinforced Concrete Beams", Accepted for publication in the RILEM Journal of Materials and Structures.
3. Pervaiz Fathima K. M. and J. M. Chandra Kishen, 2013," Sensitivity Studies on Fatigue Crack Growth in Concrete", Journal of Life Cycle Reliability and Safety Engineering, SRESA, Vol. 2, Issue 1.
4. J. M. Chandra Kishen, Ananth Ramaswamy and C. S. Manohar, 2013, Safety Assessment of Brick Masonry Arch Bridge: Field Testing and Simulations, ASCE Journal of Bridge Engineering, Vol. 18, No. 2, pp. 162 – 171.
5. Shah, SG and Chandra Kishen, JM, 2012, Use of AE in flexural fatigue crack growth studies on concrete, Engineering Fracture Mechanics, Vol. 87, pp .36 – 47.
6. Ray, S and Chandra Kishen, JM, 2012, Fatigue crack growth due to overloads in plain concrete using scaling laws, Sadhana, Jl. of the Indian Academy of Sciences, Vol. 37, Part 1, pp. 107 – 124.
7. Khandelwal, R and Chandra Kishen, JM, 2011, Thermal weight functions and SIFs for bonded dissimilar media using body analogy, ASME Jl of Applied Mechanics, 78 (6), pp. 1 – 9.
8. Shah, SG and Chandra Kishen, JM, 2011, Fracture properties of concrete-concrete interfaces using digital image correlation, Int. Jl. of Experimental Mechanics, 55 (3), pp.303 – 313.
9. Shah, SG, Bhasya, V and Chandra Kishen, JM, 2011, Tension softening parameters for concrete-concrete interfaces, ACI Structural Journal, 108 (6), pp. 725 – 734.
10. Ray, S and Chandra Kishen, JM, 2011, Fatigue crack propagation model and size effect in concrete through dimensional analysis, Jl of Mechanics of Materials, Vol. 43, pp. 75 – 86.
11. Ray, S and Chandra Kishen, JM, 2010, Fatigue crack propagation model for plain concrete – An analogy with population growth, Engineering Fracture Mechanics, Vol. 77, pp. 3418 – 3433.
12. Shah, SG and Chandra Kishen, JM, 2010, Non-linear fracture properties of concrete-concrete interfaces, Jl of Mechanics of Materials, Vol. 42, pp. 916 – 931.
13. Shah, SG and Chandra Kishen, JM, 2010, Fracture behavior of concrete-concrete interfaces using acoustic emission technique, Engineering Fracture Mechanics, Vol. 77, pp. 908 – 924.
14. Aditya Deshpande and J. M. Chandra Kishen, 2010, "Fatigue crack propagation in rocker and roller-rocker bearings of railway steel bridges", Engineering Fracture Mechanics, Vol. 77, pp. 1454 – 1466.
15. Santosh G. Shah and J. M. Chandra Kishen, 2010 "Fracture Behavior of Concrete-Concrete Interface Using Acoustic Emission Technique", Engineering Fracture Mechanics, Vol. 77, pp. 908 – 924, http://dx.doi.org/10.1016/j.engfracmech.2010.01.018
16. Ratnesh Khandelwal and J. M. Chandra Kishen, 2009, "Computation of thermal stress intensity factors for bi-material interface cracks using domain integral method", ASME Journal of Applied Mechanics, 76 (4), pp. 41010-1 – 41010-10
17. Ratnesh Khandelwal and J. M. Chandra Kishen, 2008, "Thermal Weight Functions for Bi-material Interface Crack System Using Energy Principles", International Journal of Solids and Structures, 45 (24), pp. 6157 – 6176, http://dx.doi.org/ 10.1016/j.ijsolstr.2008.07.013
18. Trisha Sain and J. M. Chandra Kishen, 2008, "Probabilistic Assessment of Fatigue Crack Growth in Concrete", International Journal of Fatigue, 30 (12), pp.2156 - 2164, http://dx.doi.org/10.1016/j.ijfatigue.2008.05.024

19. Trisha Sain and J. M. Chandra Kishen, 2008, "Damage Indices for Failure of Concrete Beams Under Fatigue", Engineering Fracture Mechanics (Elsevier), Vol. 75, No. 14, pp. 4036 - 4051. http://dx.doi.org/10.1016/j.engfracmech.2008.04.007.
20. Ratnesh Khandelwal and J. M. Chandra Kishen, 2008, "The use of conservation integral in Bi-material interface crack problems subjected to thermal loads", International Journal of Solids and Structures, 45 (10), pp. 2976 – 2992, http://dx.doi.org/10.1016/j.ijsolstr.2008.01.006
21. Trisha Sain and J. M. Chandra Kishen, 2008, "Fracture Stability and Residual Strength Assessment of Reinforced Concrete Beams ", RILEM Materials and Structures Journal, 41 (8), pp. 1451 - 1463. http://dx.doi.org/10.1617/s11527-007-9342-x
22. Vikas Garhwal and J. M. Chandra Kishen, 2008, "Correlation between fracture and damage for bi-material interface cracks", Engineering Fracture Mechanics (Elsevier), Vol. 75, No. 8, pp. 2208 – 2224, http://dx.doi.org/10.1016/j.engfracmech.2007.10.001

PAPERS PRESENTED AT FRAMCOS CONFERENCES

1. Pervaiz Fathima K. M. and J. M. Chandra Kishen, 2013, Modelling of Fatigue Crack Propagation in Concrete Using Dissipation Potential, FraMCoS-8, Toledo, Spain.
2. Nimmy M. Abraham, Keerthy M. Simon and J. M. Chandra Kishen, 2013, A Study on Fatigue Crack Growth in Concrete in the pre-Paris Region, FraMCoS-8, Toledo, Spain.
3. Hemalatha, T., J. M. Chandra Kishen and Ananth Ramaswamy, 2013, Influence of Mineral Admixures on Fatigue Behavior of Self Compacting Concrete – Scanning Electron Microscopy and Microindentation Study, FraMCoS-8, Toledo, Spain.
4. Santhosh G. Shah and J. M. Chandra Kishen, 2013, Monitoring of Fatigue Crack Growth in Concrete-Concrete Interfaces Using Acoustic Emission, FraMCoS-8, Toledo, Spain.
5. Santosh G. Shah, and J. M. Chandra Kishen, 2010, Determination of Fracture Parameters of Concrete Interfaces Using DIC, FraMCoS-7, Jeju, Korea.
6. Sonalisa Ray and J. M. Chandra Kishen, 2010, Energy Based Fatigue Crack Propagation Model for Plain Concrete, FraMCoS-7, Jeju, Korea.
7. Pervaiz Fathima K. M. and J. M. Chandra Kishen, 2010, Modeling of Multiple Cracks in Plain and Reinforced Concrete Beams, FraMCoS-7, Jeju, Korea
8. Chandra Kishen J. M. and Ananth Ramaswamy, 2010, Cracking Analysis of Brick masonry Arch Bridge, FraMCoS-7, Jeju, Korea.
9. Trisha Sain and J. M. Chandra Kishen, 2007, Probabilistic Assessment of Fatigue Crack Propagation in Concrete, FraMCoS-6, Catania, Italy.
10. Trisha Sain and J. M. Chandra Kishen, 2007, Assessment of Residual Fatigue Strength in RC Beams, FraMCoS-6, Catania, Italy.
11. P. Subba Rao and J. M. Chandra Kishen, 2007, Bimaterial Fracture Properties of Concrete-Concrete Cold Joints, FraMCoS-6, Catania, Italy.
12. Trisha Sain and J. M. Chandra Kishen, 2004, Residual fatigue life of RCC: Deterministic & probabilistic approach, FraMCoS-5, Vail, Colorado, USA.
13. P. S. Rao and J. M. Chandra Kishen, 2004, Interfacial fracture parameters & size effect in concrete-concrete cold joints, FraMCoS-5, Vail, Colorado, USA.
14. J. M. Chandra Kishen and V. Sujatha, 2001, Effect of Friction on Energy Release Rate for Interfacial Cracks in Gravity Dams, FraMCoS-4, Cachan, France
15. B.K. Raghuprasad and J. M. Chandra Kishen, 1992, Modelling of process zone for fracture of concrete, FraMCoS-1, Breckenridge, Colorado, USA.

AWARDS / RECOGNITIONS

Prof. Satish Dhawan Young Engineer State Award, 2009, Engineering Sciences: This award instituted by the Government of Karnataka is given in recognition of outstanding contributions in the field of Engineering Sciences.

SOCIETY MEMBERSHIP

- Member, IaFraMCoS
- Member, American Society of Civil Engineers
- Member, RILEM
- Charter Member, Engineering Mechanics Institute (EMI)
- Member, Indian Association for Computational Mechanics

REVIEWER FOR

- International Journal of fatigue
- International Journal of Fracture
- Engineering Fracture Mechanics
- International Journal of Mechanical Sciences
- International Journal of Solids and Structures
- Journal of Experimental Mechanics
- ACI Structural Journal
- ASCE Journal of Engineering Mechanics
- ASCE Journal of Structural Engineering
- ASCE Journal of Materials in Civil Engineering
- ASME Journal of Applied Mechanics
- RILEM Materials and Structures
- Journal of Optics and Lasers in Engineering
- Dam Engineering
- Journal of Structural Engineering and Mechanics, Korea
- Transactions of the Hong Kong Institution of Engineers (HKIE)
- Journal of Civil Engineering of the Institution of Engineers, India.

CONSULTANT

- Indian Railways
- Army Welfare Housing Organization
- Karnataka Power Corporation Limited
- Nuclear Power Corporation
- Irrigation Department, Government of Karnataka
- Reserve Bank of India
- Panchayat Raj Department, Government of Karnataka
- Larsen and Toubro
- National Highway Authority of India
- BBR India
- GE India
- Godrej Properties Limited
- Kirby Building Systems India

Vision For FraMCoS

As a member of the FraMCoS community and having attended the last four meetings in Vail, Catania, Jeju and Toledo, I feel responsible for maintaining, restoring and enhancing the steady growth of Fracture Mechanics to cementitious materials. I have found a sort of dwindling interest amongst researchers in the field of fracture mechanics as evinced by the number of high quality papers in FraMCoS since its inception. Although, one of the ways of promoting this subject is through the organization of conferences and workshops, the most important factor is to enthuse young researchers contribute at these events. With the current state of depleting economic resources in many countries around the world, it is becoming increasingly difficult for students and young researchers to travel and participate in technical discussions and conferences. This would be detrimental to the progress and development of this field. One of the ways to overcome this problem is to attract these young researchers by encouraging them with financial support to attend conferences such as FraMCoS. Although FraMCoS has established best paper awards for young researchers, more schemes need to be planned. This requires setting up of a reasonably large corpus fund. I would like to concentrate on ways of achieving this for the development and growth of fracture mechanics as applied to concrete.

Another important aspect is to bring in modern fracture theories including probabilistic tools together with applications to concrete, polymers, rock, ceramics and bio-materials to FraMCoS conference. One of the ways of achieving this task is by conducting workshops and short term courses in these specialized areas.





Conference Topics

- Recent advances in fracture mechanics of concrete
- Fracture and cracking behavior of reinforced and prestressed concrete structures
- High-performance, high strength concretes and FRC
- Advances in structural design codes
- Structural monitoring and assessment
- Repair and retrofitting, practical application
- Durability and corrosion-induced cracking
- Interface fracture and debonding phenomena
- Constitutive relations, time-dependent effects, cyclic and fatigue behaviour
- Brick masonry, concrete-like and quasi-brittle materials
- Computational aspects in fracture mechanics of concrete

Apart from the usual themes involving fracture and fracture mechanics related to concrete as stated above, the following new themes would be added:

- Durability aspects
- Earthquake engineering
- Coupled transport / flow problems

New materials including rock, polymers, ceramics and bio-materials.

Each theme would be organized and managed by an expert member for better focus thereby imparting justice to all themes.

Tentative Dates

Conference Dates	5th August 2019 – 9th August 2019
1st Announcement Brochure	March 2017
2nd Announcement Brochure	March 2018
Submission of Abstracts	December 2018
Notifications of Acceptance or Rejection	February 2019
Submission of Full Papers	April 2019

Tentative Budget

The following is a tentative budget based on current pricing for 300 conference delegates.

SL. NO.	ITEM	AMOUNT (IN US DOLLAR)
1	**Conference hall rentals**	18,000
2	**Projection and other equipment**	5,000
3	**Printing of proceedings, book of abstracts, etc.**	10,000
4	**Registration kit**	13,000
5	**Welcome reception**	5,000
6	**Conference banquet**	15,000
7	**Lunches (5 days)**	20,000
8	**Coffee and snacks (10 breaks)**	3,000
9	**Postage**	2,000
10	**Secretariat / Assistance**	20,000
11	**Transportation**	10,000
12	**Miscellaneous**	10,000
13	**Award for Young Researcher**	3,500
14	**Transfer to IA-FraMCoS after the conference**	6,000
	Total	**140,500**

Expected Income

The following is an estimation of estimated income from different sources.

SL. NO.	ITEM	AMOUNT (IN US DOLLAR)
1	**Registration**	
	200 regular delegates @ USD 550	110,000
	50 student delegates @ USD 250	12,500
2	**Sponsorships**	
	Dept. of Science and Technology, India	2,000
	Council for Scientific and Industrial Research, India	2,000
	Dept. of Atomic Energy	2,000
	Tata Trust, India	2,000
	Cement and construction chemical industries	5,000
	Other industrial sponsors	5,000
	Total	**140,500**

Registration Details

(Based on current pricing and could change due to inflation)

Conference Delegate	US $ 550
Student	US $ 250
Accompanying person	US $ 100

The registration fee would include:

- Book of abstract
- Hard copy of proceedings
- Soft copy of Proceedings in a CD
- A laptop carry bag
- Welcome reception
- Lunches on all days
- Banquet Dinner with a cultural program

In addition the following complimentary services would be offered free of cost to all delegates:

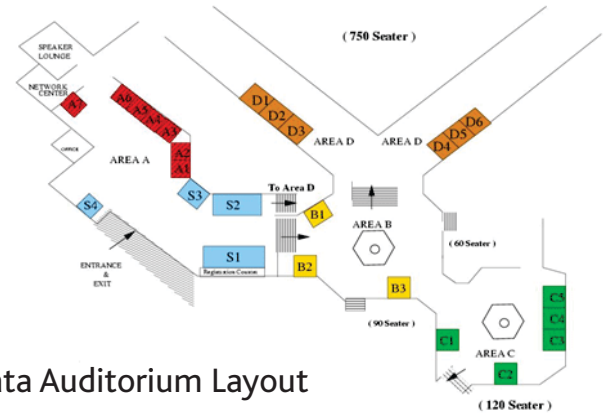
- Airport to hotel transfers (Both pick-up and drop).
- Half day sight-seeing of Bangalore city in an Air-conditioned shuttle.
- One day trip to the historic and cultural city of Mysore a day before or after the conference in an air-conditioned shuttle.



Conference Venue - JN Tata Auditorium

Located in the south part of Indian Institute of Science campus. It has an Auditorium, three breakout halls, a Food & Beverage area, a foyer area for registration and wash room.

Sl.No	JN Tata Auditorium hall description	Capacity (No. of people)
1	The Main Auditorium	750 auditorium style
2	Auditorium A	120 auditorium style
3	Auditorium B	90 auditorium style
4	Auditorium C	60 auditorium style
5	Food & Beverage Area	Standing Buffet for up to 700 pax
6	Foyer Area	For Registration



JN Tata Auditorium Layout



Bangalore Accommodation

Luxurious Hotel to university Accommodation, Bangalore has an extensive choice of accommodation to suite all the delegate needs.

Rooms in Bangalore are ideal for the delegates who have come from various parts of the world to have their pleasant stay during the conference.There is a vast increase in the inventory of budget accommodation in the vicinity of the Conference Venue.

Few hotels have come up with Special rates for the delegates who attend the International Conferences. Also the tourism board, International Airport and transport companies join hands to ensure the comfort. Many more hotels slated to open in the next 3 years.

The Appointed Professional Conference Organizer (PCO) would contract the rooms with city hotels immediately following the bid win to ensure the competitive rates and large rooms blocks at each property.

Overview of Accommodation

We have good number of hotels close to J.N.Tata Auditorium and below is the summary of the total amount of rooms available in and around J.N.Tata Auditorium

Extensive Choice from various Hotels like Sheraton, ITC group of Hotels, MovenPick, Le Meridien, Aloft, St Regis , Taj, Oberoi etc.

Upcoming Hotels like JW Marriot, Ritz Carltson etc

Hotel Type	No of Rooms	Approx Rate
5 Star	1747	$ 180 – $ 240
4 Star	813	$ 120 – $ 180
3 Star	537	$ 80 – $ 120
Budget	315	$ 40 – $ 80

The Above Hotels Charges are indicative and subject to change.

Hotels around Conference Venue

Name of Hotel	Category	No of Rooms	Distance from the Venue
Sheraton	5 Star	230	4 km
Taj Vivanta	5 Star	327	4.5 km
Le Meridian	5 Star	197	6 km
The Solitaire	4 Star	99	5 km
Gold Finch	4 Star	50	5 km
37th Cresent	3 Star	57	5 km
Chevron Orchards	3 Star	40	1 km
Coral Tree	3 Star	35	1.5 km
Maurya	Budget	45	1 km

Accessibility – International

Bangalore is well connected to all major places in the world.

Bangalore International Airport : Bangalore International Airport , India's first greenfield airport, has been envisioned as a business and travel hub for South India. Located at a 45 mins drive from Indian Institute of Science. Their plans are designed to provide facilities and services to all passengers while maximizing the infrastructure and land space available. It connects to 16 international Airports around the world. 120 International flights per week. Handling capacity of 3000 passengers per hour. Some popular airlines are Emirates, Air France, British Airways, Lufthansa, Singapore Airlines, Thai Airways, Air India, Malaysian Airlines.

Direct Connectivity From

- Abu Dhabi
- Bangkok
- Colombo
- Doha
- Dubai
- Hongkong
- Jeddah
- KualaLumpur
- London
- Mauritius
- Muscat
- Paris
- Shanghai
- Frankfurt

Easy Accessibility From

- Spain
- Switzerland
- Portugal
- Sweden
- Jersey
- United Kingdom
- Italy
- France
- New York
- Los Angeles
- Chicago
- Seoul
- Cape Town

Accessibility – Domestic

Bangalore Airport has connectivity to 28 domestic airports in India. Around 490 flights land and take off in Bangalore in each week. Last year Bangalore Airport handled more than 3 million passengers. Domestic Flights are operated during the day. Some Popular Airlines are Go Air, Indian Airlines , Jet Airways , Kingfisher Airlines , Spice Jet.

Kempegowda Bus Station: It is commonly known as Majestic Bus Station, is a large bus station in central Bangalore, India. There are plenty of bus services to various states such as Andhra Pradesh , Maharastra and towards North India.





Satellite Bus Station : All buses bound towards Kerala and Tamil Nadu start from Satellite Bus station. There is a bus service to mysore every 15mins which is 145 kms far from Bangalore.

Shanti Nagar Bus Station : You can find all government buses such as KSRCTC, SETC, APSRSTC which has 24 hours services to different cities in Andra Pradesh, Tamil Nadu, Kerala





Majestic Railway Station : Bangalore is one of the important junctions of India. Platforms 1 to 7 connect to the Chennai and Salem railway lines. On platforms 8 to 10, service trains arrive via Yeshwantpur from Hubli. Platforms 1 to 4 terminate at Bangalore. On platforms 5 to 10, service trains depart towards Mysore. There are railway lines between Platforms 4 and 5 that are used as the railway yard. There are plenty of trains to all major cities in india.

Yeswanthpur Railway Station : A Major railway terminal is located in Yeswanthpur. Many long distance trains to Delhi, Mumbai, Hyderabad, Indore and Howrah originate from here. Its also an important station for all trains going on the Bangalore-Hubli track. Yeshwanthpur is also linked to the Bangalore Metro Project which is expected to be completed by 2016.



Probable Sponsors

Dept. of Science and Technology, India

Centre for Scientific and Industrial Research, India

Dept. of Atomic Energy, India

Tata Trust

UltraTech Cement Ltd.

FOSROC, Construction Chemical Industry

Indian National Science Academy

Indian Concrete Institute

ASCE (India Section)

Structural Engineering World Congress

ADITYA BIRLA
UltraTech

Date:10.7.2013

To

Prof. J. M. Chandra Kishen
Professor, Department of Civil Engineering
Chairman, Centre for Scientific & Industrial Consultancy
Indian Institute of Science
Bangalore-560012, India.

Subject: Letter of Support for Bidding of FraMCoS-2019 by Indian Institute of Science

Dear Prof. Chandra Kishen

We understand that you are preparing to bid for the Tenth International Conference on Fracture Mechanics of Concrete and Concrete Structures (FraMCoS) 2019, to organize it in Indian Institute of Science (IISc) Bangalore, India. Since its inception, this prestigious conference has been organized in many countries, but so far, not in India. Our group will be extremely happy if FraMCoS 2019 is awarded to IISc. Bangalore, India; and in that case we will encourage our fellow colleagues/scientists and students to participate in the same. We are sure that this conference will be a great source of knowledge in the area of cementitious material research for the large volume of young civil engineering students and professionals in India. Since India is in the process of building its infrastructures in a large way, this conference would also be a platform for all Indian professionals to showcase their advancement in concrete research. We also feel that the conference delegates will cherish the culture, heritage, hospitality, and tradition of our country.

On behalf of the Indian Concrete Institute, we welcome the bid for FraMCoS 2019 at Bangalore, and are glad to provide our support for the same.

Thanking you

Yours Sincerely

Dr.V.Ramachandra
Zonal Head - Tech

UltraTech Cement Ltd.
5th Floor, 45, Industry House, Fair Field Layout
Race Course Road, Bengaluru 560001

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Date: 2nd July 2013

To
Prof. J. M. Chandra Kishen
Professor, Department of Civil Engineering
Chairman, Centre for Scientific & Industrial Consultancy
Indian Institute of Science, Bangalore-560012, India.

Subject: Letter of Support for Bidding of FraMCoS-2019 by Indian Institute of Science

Dear Prof. Chandra Kishen

I understand that you are preparing to bid for the Tenth International Conference on Fracture Mechanics of Concrete and Concrete Structures (FraMCoS) – 2019, to organize it in Indian Institute of Science (IISc) Bangalore, India. ASCE India Section will be extremely happy if FraMCoS 2019 is awarded to IISc, Bangalore, India. We are sure that this conference will be a great source of knowledge in the area of cementitious material research for the large volume of young civil engineering students and professionals in India. We also feel that the conference delegates will cherish the culture, heritage, hospitality, and tradition of our country.

India has many higher education institutes (IISc, IITs, IIMs, NITs, CEPT etc.) with post-graduate and research programmes in concrete technology, structural and infrastructure engineering. The successful winning and hosting of the conference will put India as a part of world leadership in the area of structural engineering research and, therefore all Indian civil engineering professionals stand united on supporting this bid.

Considering IISc's reputation and with the image of Information Technology (IT) capital and garden city of India, Bangalore makes an ideal venue for hosting FraMCoS 2019 in India. On behalf of the ASCE, India Section, we welcome the bid for FraMCoS 2019 at Bangalore, and are glad to provide our support for the same.
Thanking you

Yours Sincerely

(Prof. G L Sivakumar Babu)
President ASCE, India Section

President, ASCE India Section: Department of Civil Engineering, Indian Institute of Science, Bangalore 560012, INDIA
Ph: + 91 80 2293 3124, Fax: + 91 80 2360 0404, Email: gls@civil.iisc.ernet.in

Supporting Letters

Date: 06/07/2013

Prof. J. M. Chandra Kishen
Professor, Department of Civil Engineering
Chairman, Centre for Scientific & Industrial Consultancy
Indian Institute of Science
Bangalore-560012, India.

Subject: Support for Bidding of FraMCoS-2019 by Indian Institute of Science

Dear Prof. Chandra Kishen

We are glad to know that you are preparing to bid for the Tenth International Conference on Fracture Mechanics of Concrete and Concrete Structures (FraMCoS) – 2019, to organize it in Indian Institute of Science (IISc) Bangalore, India. We understand that this prestigious conference has been organized in many countries, but so far, India was not chosen as a host country.

Structural Engineers World Congress [SEWC] Worldwide would be extremely happy if FraMCoS 2019 is awarded to IISc, Bangalore, India; and in that case we will encourage our fellow colleagues and others to participate in the same.

As you are aware, the Structural Engineers World Congress is an International Body with presence in several countries including India. We understand the objectives of this Conference are in line with our educational objectives and therefore we would be pleased to support your bid with a clear understanding that this does not entail any financial commitment from our side.

We welcome your bid for hosting FraMCoS 2019 at Bangalore and we wish you success.

With warm regards,

Yours Sincerely

R. SUNDARAM
President – Structural Engineers World Congress-Inc. Worldwide [SEWC Inc.]
President – Structural Engineers World Congress India.
Chairman & Managing Director – Sundaram Architects Pvt. Ltd.,
No: 19 Kumara Krupa Road, Bangalore – 560 001, India.
Tel: 0091-80-380701/22380702/22380703/22265507
Fax: 0091-80-2225 2339 E-mail: edp@sundaramarchitects.com

About Indian Institute of Science

The Indian Institute of Science (IISc) was conceived as a ´Research Institute´ or ´University of Research´ by Jamsetji Nusserwanji Tata, in the final years of the 19th century. The early history of the Institute is a fascinating chapter in the story of higher education and scientific research in India. In the century that has passed since its inception, IISc has grown to become India´s premier centre for research and postgraduate education in science and engineering.

A long history, a strong tradition of academic research and an ambience that favours scholarly activity have been important elements in making the Institute a most attractive place for students and faculty. As the Institute has grown, several new areas of research have been established. The Institute offers a variety of Master´s degree programs in Engineering, an integrated Ph.D. program in Sciences and Ph.D. programs in a wide spectrum of disciplines in science and engineering. The research laboratories at the Institute are extremely well equipped. Many National facilities are housed at the Institute. The library and computational facilities at the Institute are amongst the best in India. The Institute hosts hundreds of visitors from India and abroad every year and is the venue for many major National and International academic events.

About Indian Institute of Science (Civil Engineering)

Engineering is concerned with the application of the basic sciences and mathematics to solving real-world problems. On one hand a scientist is a "consumer" of engineering solutions.

The Department of Civil Engineering of the Indian Institute of Science was established in the year 1950 and has grown over the years into one of the finest centers of advanced research and training in the field of Civil Engineering. The Department focuses on advanced research and education in the broad areas of Geotechnical, Structural, Transportation, and Water Resources & Environmental Engineering. The Department is recognized as a Center for Advanced Studies (CAS) by the University Grants Commission of India, a Center of Excellence in Water Resources by the Central Board for Irrigation and Power, and has been recognized by the Department of Science and Technology with funds under the FIST program.



Bangalore – Glorious Past and Promising Future

India's pride, Bangalore is nearly 500 years old and has grown from a small time settlement when Kempe Gowda, the architect of Bangalore, built a mud fort in 1537 and his son marked the city boundaries by erecting four watch towers. Today Bangalore has grown well beyond those four towers into a sprawling metropolis of more than 10 million people and is referred to as the Silicon Valley of India - accounting for more than 40 percent of India's software exports. Bangalore's temperate climate, high quality educational, scientific and technology institutions coupled with a thriving IT and Bio-Technology and manufacturing industry makes Bangalore one of the most sought after global destinations.

Bangalore has a number of elite clubs, like Century Club, The Bangalore Golf Club, the Bowring Institute and the exclusive Bangalore Club, which counts among its previous members Winston Churchill and the Maharaja of Mysore. Bangalore has an active night culture and is home to over 200 clubs and bars. The city is also referred to by many as the "Pub Capital of India". Popular nightspots in Bangalore include Pecos, The Club Inferno, Kyra Theatre and TGIF.

Since the recent explosion of software companies in Bangalore, it has seen a rise in the number of western-style Malls, such as Phoenix MarketCity, Orion Mall, The Forum, Bangalore Central and The Garuda. These malls are evolving as the current "hang-outs" for both the young and the old, with trendy stores, restaurants and the latest crop of clubs (such as The Hint, at Bangalore Central). Another change has been the gradual decline of single-screen cinemas and the increase of multiplex theatres, hosted by the same burgeoning malls. The BPO and IT boom has contributed to lot of disposable income among the younger generation.

Eating out is another passion for Bangaloreans. The variety in terms of cuisines, types and themes that Bangalore restaurants offer is diverse and caters to every taste.

In 2020, Bangalore is expected to be global innovation hub not only in IT , but also in Clean energy, Bioengineering , Medical devices and also in Space Technology.

Bangalore – Key Statistics

Bangalore is best known for making people all over the world at home. Bangalore has been ranked as the best Indian city both in terms of quality of living and the personal safety standards.

Bangalore is one of the the southern technology hub. Bangalore has emerged as the best city to live in India, a global survey said. The City is well known as a hub for India's Information Technology sector. It is among the top 10 preferred Entrepreneurial locations in the world.

Location	$12^{0}58'$ N $77^{0}34'$ E
Altitude	3000 ft. above sea level
Population	10 million
Area	741 square Kilometres
Average Rainfall	800 mm
Languages	Kannada, Hindi, English, Tamil, Konkani, Telugu, Malayalam,
Temperature	Maximum : 33^{0} C to Minimum 14^{0} C

Bangalore – Science and Technology Hub

Explosion of knowledge and information, based on breathtaking advancement in the field of science and technology, has bestowed on man powers enviable even for gods. It has helped man conquer space and time. Now he has unraveled many mysteries of nature and life and is ready to face new challenges and move forward in the realm of the unknown and the undiscovered.



Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) is a multidisciplinary research institute situated in Jakkur, a locality north of Bangalore, India. It is relatively young yet well-known around the Globe. The institute's mandate is to pursue and promote world-class research and training at the frontiers of Science and Engineering covering broad areas ranging from Materials to Genetics. It provides a vibrant academic ambience hosting more than 200 Researchers. The Centre is funded by the Department of Science and Technology, Government of India and is a deemed university.

The National Centre for Biological Sciences (NCBS), located in Bangalore, is part of the Tata Institute of Fundamental Research. The mandate of NCBS is fundamental research in the frontier areas of biology. Research interests range from the study of single molecules to ecology and evolution. In addition we engage in a number of collaborative initiatives, such as instem and the iBio and we help to develop cutting edge instrumentation and software via C-CAMP.





ICRI is the Country's premier **Clinical Research Institute** which is exclusively focused on specialized Clinical Research Programmes. Provide an independent global framework for International education, training and exchange of information for Clinical Research Professionals and to foster professional excellence in design and execution of clinical research, thereby contributing to enhancing the Clinical Research culture in India.

Ashoka Trust for Research in Ecology and the Environment (ATREE) is a research institution in the areas of biodiversity conservation and sustainable development. We focus on applied science through research, education and action that influence policy and practice on conservation of nature, management of natural resources, and sustainable development.

ATREE
Ashoka Trust for Research in Ecology and the Environment

National Diary Research Institute : The R&D activities of the Institute mainly focus on three fundamental facets of Dairying i.e. production and management of dairy animals for better productivity, innovating suitable milk processing technologies and equipments, and providing the dairy farmers and entrepreneurs with information about existing market demands and practical management inputs for making dairying a self-sustaining, profitable business. Research, both in basic and applied aspects, in various disciplines constitute the core activity of the Institute.





Central Power Research Institute (CPRI) is the power house of the Indian electrical industry. Set up in 1960 by the Government of India, it functions as a centre for applied research in electrical power engineering assisting the electrical industry in product development and quality assurance. CPRI also serves as an independent authority for testing and certification of power equipment. CPRI's governing body includes eminent professionals from industries & utilities, prestigious academic and research institutions & the government. It employs over 300 highly qualified and experienced engineers & scientists besides other supporting staff.

Council of Scientific and Industrial Research (CSIR) is the premier industrial Research and Development organization in India was constituted in 1942 by a resolution of central legislative assembly. The prime focus of CSIR is to bring innovation in material and manufacturing process. CSIR have spearheading research in engineering structure and design. Be it developing mechanized casting of reinforced concrete cored units for roof/ floor by CBRI in the most cost-effective and timely manner. Many such noticeable achievements in the field of engineering sciences have been made.



Indian Space Research Organization (ISRO) The Space Commission formulates the policies and oversees the implementation of the Indian space programme to promote the development and application of space science and technology for the socio-economic benefit of the country. DOS implements these programmes through, mainly Indian Space Research Organisation (ISRO), Physical Research Laboratory (PRL), National Atmospheric Research Laboratory (NARL), North Eastern-Space Applications Centre (NE-SAC) and Semi-Conductor Laboratory (SCL).The Antrix Corporation, established in 1992 as a government owned company, markets the space products and services.

Tourist Places in India

The Indian adventure provides ample of opportunities. From Deserts, Mountains, Forts & Palaces, Ancient cities to modern cultural capitals, sun beach, Ayurveda & scenic Backwaters, Plantations, Spirituality, there is something for everyone.

Golden Goa :

It is civilized, having famous orchards and water. It is the coolest place in India and it is the most plentiful in foodstuffs. Place known for relaxation. There are millions of tourist who visit Goa.



Enchanting Kerala Gods Own Country :



Kerala enjoys unique geographical features that have made it one of the most sought after tourist destinations in Asia. An equable climate. A long shoreline with serene beaches. Tranquil stretches of emerald backwaters. Lush hill stations and exotic wildlife. Waterfalls. Sprawling plantations and paddy fields.

Temples & Spice :

It takes you on a sacred journey to all the important temples in India. These tours are not only a pilgrimage but an insight into the engineering and architectural excellence that was achieved centuries ago and have withstood the test of time.



Golden Triangle Tour :



Golden Triangle Tour covers the primitive to modern attractions of the capital city, Delhi, one of the Seven Wonders of the World the Taj Mahal, forts and Palaces of Jaipur and Fatehpur Sikari. No doubt, cities that you visit through this tour are the personification of Indian historical, cultural and architectural heritage.

Karnataka Heritage:

It gives you an idea of the rich cultural heritage of Karnataka. During this tour you will visit the erstwhile capital of Karnataka-Mysore and the present capital -Bangalore. This package includes a visit to the intricately carved Hindu temples of Belur and Halebid. You will visit the Nagarhole National Park as well. This tour gives you a glimpse of Karnataka's natural wealth and cultural heritage.



Local Attractions – Historical



Tipu Sultan's Summer Palace was the summer residence of Tipu Sultan till his death in the year 1799 during the Fourth Anglo-Mysore War. Its construction was started by Hyder Ali within the walls of the Bangalore Fort and completed during the reign of Tipu Sultan in the year 1791. This magnificent structure have been built entirely with French Rose wood and stands adorned with pillars, arches and balconies. There is also a small museum in the palace which is open to public. The outside path is lined with beautiful plants and trees.



Bangalore Palace, a palace located in Bangalore, India, was built by Rev. Garrett, who was the first Principal of the Central High School in Bangalore, now known as Central College. The construction of the palace was started in 1862 and completed in 1944. In 1884, it was bought by the Maharaja of Mysore.



HAL Aerospace Museum is India's first aerospace museum located at Hindustan Aeronautics Limited premises, in Bangalore. Established in 2001, the Museum is part of the HAL Heritage Centre and Aero Space Museum, and showcases the growth of the Indian aviation industry and HAL for six decades.The museum houses displays of various aircraft and helicopters, Aircraft engine models, Flight simulators, a mock Air Traffic Control Tower and exhibit of Indian aviation history.



Nandi Hills or Nandidurg is an ancient hill fortress of southern India, in the Chikkaballapur district of Karnataka state. Nandi Hills was called Ananda Giri meaning The Hill of Happiness. Nandi is also commonly called Nandidurga (Fort) because of the fort build here by the ruler Tippu Sultan. It is also perhaps called Nandi Hills because the hill resembles a sleeping bull.



The Visvesvaraya Industrial and Technological Museum is not a 'museum' in its classical sense, because it has interactive exhibits unlike stationary models of a museum. It is more of a "Science Centre". Each floor of this museum is dedicated to a scientific discipline. The museum which attracts close to one million visitors a year. A serious visitor should be prepared to spend at least 3 hours in the Museum to have a glimpse of this treasure house of knowledge in the heart of Bangalore.

Local Attractions Leisuire



Lal Bagh meaning The Red Garden in English, is a well known botanical garden in southern Bangalore, India. The garden was originally commissioned by Hyder Ali, the ruler of Mysore, and later finished by his son Tipu Sultan. It has a famous glass house which hosts an annual flower show. Lal Bagh houses India's largest collection of tropical plants, has an aquarium and a lake, and is one of the main tourist attractions in Bangalore.



Cubbon Park is a landmark 'lung' area of the Bangalore city.It has a rich recorded history of abundant flora and fauna plantations coupled with numerous impressive and aesthetically located buildings and statues of famous personages, in its precincts. The landscaping in the park creatively integrates natural rock outcrops with thickets of trees, massive bamboos, with grassy expanse and flowerbeds and the monuments within its limits, regulated by the Horticulture Department of the Government of Karnataka.The predominantly green area of the park has many motorable roads, and the well laid out walking paths running through the park are frequented by early morning walkers and the naturalists who study plants in the tranquil natural environment.



Bannerghatta Biological Park is carved out of the Bannerghatta National Park in the year 2002. It is situated 22 km south of Bangalore, Karnataka, India. The journey to the park takes nearly one and a half hours from Bangalore. This hilly place is the home for one of the richest natural, zoological reserves. The 25,000 acre zoological park makes this a major tourist attraction of Bangalore.

The country's first Butterfly Park was established at the Bannerghatta Biological Park. The Butterfly Park is spread across 7.5 acres of land. It comprises a butterfly conservatory museum and an audio-visual room.



Dodda Basavana Gudi (the Bull Temple) is situated in the N.R. Colony, Basavanagudi, area of South Bangalore, part of the largest city of the Indian state of Karnataka. The Hindu temple is inside the a park called Bugle Rock.
The bull referred to is a sacred Hindu demi-god, known as Nandi; Nandi is a close devotee and attendant of Shiva. Dodda Basavana Gudi is said to be the biggest temple to Nandi in the world.



Innovative Film City is a revolutionary concept in the field of entertainment. It is captivating the hearts of millions of visitors. It has an annual target of entertaining 6 million people per annum. IFC has today become the pride of the State and a prominent landmark inviting tourist from all over the country. It houses 27 different facilities ranging from, Amphitheatre, Retail High Street, Food Courts, Theme Restaurants, Entertainment District with India's first Dinosaur Park, Haunted Mansion, Cartoon City with India's biggest Roller Coaster, Aqua Kingdom, miniature city , Funplex within 4D, Adventure Sports.

In and around Bangalore

Chamundi Hills :



The temple has always been patronised by the rulers of Mysore. In earlier days, the Maharajas of Mysore would decorate the ceremonial Dasara elephant during the annual Dasara festival; since the seventies, the idol of Goddess Chamundi is taken on an elephant.

There are two ancient temples on the hill, the Mahabaleshvara and the Chamundeshvari. It is a place of pilgrimage. A panoramic view of the city is seen from the top of the hills.

Meke Dattu :



At Mekedaatu, the Kaveri runs through a deep, narrow ravine of hard granite rock. The river, which is more than 150 meters wide at the confluence (at Sangama) flows through the hardly 10-meter-wide gorge at Mekedatu. One can see the ferocious flow of all that water. It is said that a goat could leap over it, giving the falls the name Goat's Leap.

Mysore Palace :



Mysore Palace specifically refers to one within the old fort. It is the official residence of the Wodeyars - the erstwhile royal family of Mysore, and also houses two durbar halls. The architectural style of the palace is commonly described as Indo-Saracenic, and blends together Hindu, Muslim, Rajput, and Gothic styles of architecture. It is a three-storied stone structure, with marble domes and a 145 ft five-storied tower. The palace is surrounded by a large garden.

Srirangapatna :



Srirangapatna is of great religious, cultural and historic importance. The entire town is enclosed by the river Kaveri to form a river island, northern half of which is shown in the image to the right. While the main river flows on the eastern side of the island, the Paschima Vaahini segment of the same river flows to its west.

Ranganatittu Bird Santuary :



It is the largest bird sanctuary in the state, only 67 km². in area, and comprises six islets on the banks of the Kaveri river. Ranganthittu is located three kilometers away from the historic town of Srirangapatna. Roughly around 170 birds have been recorded here in great numbers over the years. Of which birds like Painted Stork, Asian Openbill Stork, Common Spoonbill, Woolly-necked Stork, Black-headed Ibis, Lesser Whistling Duck, Indian Shag, Stork-billed Kingfisher and other common birds like egrets, cormorants, Oriental Darter, and herons breed here regularly.

About CIMGLOBAL:



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- CIM is a Professional Conference Organizer and in service since 1997.
- CIM has been mandated by Indian Convention Promotion Bureau (ICPB) to bid for international conferences and get them to India.
- CIM along with the respective government department/ Association member/ industry leader is instrumental in getting International conferences into India. If India wins the bid we will manage/ market and execute the conference too.
- CIM is a pioneer and leader in the Indian MICE-Association industry
- The company's credentials include Total Conference & Meeting Management Services for over 100 International /National conferences as a PCO to its credit.
- CIM has its offices in New Delhi, Bangalore , Hyderabad , Ahmedabad , Mumbai, Chennai and Kolkata.
- CIM also has off shore office in Dubai, Singapore, London (marketing office).
- CIM by virtue of its well defined mission and team of dedicated and committed professionals with clear customer focus has established itself as a business leader in the highly specialized field of organizing Conferences, Corporate Incentives, Business Events and Exhibition Management



LOOK FORWARD TO WELCOMING

FraMCoS 2019
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