



# POWDER METALLURGY ASSOCIATION OF INDIA

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## Editorial

A major attraction of this Newsletter is the report on PM17, International Conference on Powder Metallurgy & Particulate Materials, held at Hotel Pride Plaza, Delhi, 20 – 22 Feb, 2017. The presentation of memorial lectures, parallel technical sessions, PMAI Fellow, Grand PMAI Student Award, Guiding Hand Award for faculty, Young Promising Professional Award, Tendolkar Award for basic research in powder metallurgy, Best PM Product Award and the Exhibition with record participation are the highlights of the event.

PMAI office bearers elected for the year 2017-19 are presented, our appreciation to Mr. Gopinath who consented for re-election as President of PMAI for another 2 year term, his third.

A report on the 4th International Conference of Powder Metallurgy in Asia - APMA 2017 of the Asian Powder Metallurgy Association (hosted by the Taiwan PM Association at Hsinchu) is included in this issue. The next (5th) APMA conference will be held in India in 2019. Also reported in this issue is the experience of Manoj Gautam, the winner of the Grand PMAI Award for the best student paper during our PM17 conference. The award was an all expense paid attendance at the APMA 2017 conference in Taiwan.

Trans. PMAI, Vol.42(2), 2016 has been published and is available in our website [www.pmai.in](http://www.pmai.in).

This newsletter also covers the Powder Metallurgy Short Course (PMSC 17) to be held at M. S. University, Baroda followed by the ACC.17 to be held in Pune and finally our next major event, PM.18 International PM Conference to be held in Navi Mumbai.

**P. Ramakrishnan**

## Contributions solicited

We need from PMAI members, news items for publication in this (thrice yearly) newsletter.

We mean stuff like technical developments, new products, business developments, promotions, job changes, organizational changes, mergers & acquisitions or just plain gossip.

We would like to publish your stories (editorial rights reserved) regularly.

## PM17 International Conference on Powder Metallurgy

The PM17 International Conference on Powder Metallurgy & Particulate Materials + Exhibition was held on 20 - 22 Feb, 2017 at the Hotel Pride Plaza, Delhi Aerocity. The event was sponsored by Dorst, Fluidtherm, Hoeganaes, Hoganas, Osterwalder, Pometon, Pricol, Rio Tinto, Singhal Sintered, Sintbush, Sintercom, SLM Metals, SMS GmbH, Speciality Sintered, Star Sintered, Haili Press and Co-Sponsored by Makin Metal powders. A total 70 technical presentations were made during this event which 185 delegates attended.



*Inauguration by traditional lighting of the lamp (left to right)  
Prof. T. R. Rama Mohan Co- Convener,  
N. Gopinath, President PMAI and Prof. P. Ramakrishnan, Convener*

Convener Prof. P. Ramakrishnan welcomed the delegates and traced the development of PM in India by describing specific components that made significant impact, starting from the sintered bush to more advanced parts that are on the anvil for meeting stringent emission norms. He described the evolution of non ferrous, hard metal & heavy metal parts & spoke also of the bright prospects for PM tooling & superalloy parts. He explained the potential for PM in the development of electrical & electronic parts in all walks of life. He spoke of the crowd at the PMAI stall at the IMTEX exhibition & bemoaned the lack of awareness of PM in the Indian engineering community. He lauded the GoPM initiative of PMAI which is a program for popularizing PM by participation in exhibitions.

Mr. N. Gopinath, president PMAI provided statistics of PM powder & part production in India spoke of the bright future of PM production in India. The reason for this optimism in spite of years of bright projections followed by disappointing reality he explained were due to;

The introduction of the GST which would facilitate free transportation of goods & services to the benefit of manufacturers and consumers.

The planned promotion for the indigenous manufacture of electronics goods in India which should benefit makers of powder injection moulded & other “energy” products.

The imminent imposition of Bharat 7 vehicular emission norms which should add several new components to the portfolio of upper end manufacturers & their ballast to the lower end.

The two keynote lectures were delivered by Dr. Hans Soderjhelm, FPMAI, Hoganas AB, on metal powder for additive manufacturing and Dr. Kalathur Narasimhan, FPMAI P2P Technologies on press and sinter parts for magnetic applications.

## PM17 Memorial lectures



*(Left to Right) Prof. Dr. Rama Mohan Tallapragada,  
Dr. Madangopal Krishnan, Mr. N. Gopinath*

The Tamhankar Memorial Lecture was delivered by Prof. Dr. Rama Mohan Tallapragada, FPMAI on **“Some problems hindering the development of high technology particulate materials In India”**.

Dr. Madangopal Krishnan of BARC delivered the P.R .Roy Memorial lecture on **“Overview of shape memory alloys and their applications”**.

Mr. Gopinath of Fluidtherm Technology & President PMAI delivered the **S. L. N. Acharyulu** Memorial Lecture on **“Energy consumption & potential for savings in the PM Process”**

## PM 17 Fellows & Awards

Mr. Virendra Sud the first MD of Hoganas India and presently the MD of Pometon India, was awarded the Fellowship of PMAI for his contribution to PMAI & the PM industry in India.



*Fellowship of PMAI awarded to Mr. Virendra K Sud (L)  
By Prof. Ramakrishnan, Convener PM17*

## Grand PMAI Student Award

With a view to encourage students make a career in powder metallurgy, PMAI had introduced a Grand PMAI Student Award which comprises a fully paid trip to an international PM Conference outside India.

The third winner of this award (chosen amongst papers presented in PM17) is Mr. **Manoj Gautam**, M.Tech. student of Thapar University, Jaipur for his paper “**Synthesis and Characterisation of Composite Electrolyte Material for IT-SOFC**”

He received an all-expense paid trip to “**APMA 2017**” International PM Conference at **Taiwan** organised by the **Taiwan Powders and Powder Metallurgy Association (TPMA)** during April 9 to 11, 2017. He provides a first person account in this newsletter

#### The PMAI Guiding Hand Award for Faculty

Dr. Amit Sinha, BARC and A. Venkatasubramanian, Thapar University were the guides of the winner of the grand PMAI student award, **Manoj Gautam**. A cash award of Rs. 25,000/- was shared among the two guides and a certificate was presented.

#### The PMAI Award for A Young Promising Professional

A cash prize of Rs. 25,000/- & certificate for the best paper of industrial relevance was given to **Dr. Vikram V. Dabhade**, Asst. Professor, IIT, Roorkee.

#### The Tendolkar Award

A cash prize of Rs. 10,000/- & certificate for the best paper on basic research in PM were given to **Ankit Goyal**, Malaviya National Institute of Technology, Jaipur for “**Bandgap Engineering in Nanocrystalline Silicon Powder by Mechanical Alloying**”

#### Best PM Part Award 2017

The Best PM Part Award 2017 was presented to **Speciality Sintered Products P Ltd** in recognition of their ability to meet the technical challenges in producing a complex part, **Gear Timing Camshaft**.



***Gear Timing Camshaft  
SPECIALITY SINTERED***

#### Certificates of Excellence for PM Part Development 2017

Certificates of Excellence 2017 were presented to **GKN SINTER METALS P Ltd** for producing a complex PM part, Fly Weight (for use in 2WH Engine – cam shaft group component) and **SINGHAL SINTERED P Ltd** for producing a PM part which replaced a conventional machined part **PINION GEAR** (for use in car window regulation).



***FLY WEIGHT  
GKN SINTER METALS***



***Pinion Gear 1 gram  
SINGHAL SINTERED***

#### PM 17 Sponsors & Exhibitors: PMAI expresses its gratitude to all sponsors & exhibitors;

DORST, Fluidtherm, Hoeganaes, Hoganäs, Makin, Pometon, Pricol, Rio Tinto, Singhal, Sintercom, SLM, SMS, SSPL, Star, Haili, AMETEK, Chung Yi, Codina, Innomet, Malvern, Meeturaj, EPM, Orton, Newmet, Osterwalder, PVA, RVB, SACMI, Sharda

PMAI places on record the invaluable contribution of Mr. K. S. Samant Director PMAI, Mr. C. Venkateswaran, GM, Fluidtherm without whose effort the conference would not have been the success it was.

#### PMAI Elections

PMAI elections were held on 19<sup>th</sup> February, 2017 the day prior to the PM17 conference, at the same venue.

In the hallowed tradition of PMAI the election was unanimous & held in a friendly spirit of accommodation & fellowship. The elected & co-opted members of the Governing Council some of whom are office bearers for the year 2017-19 are;

Aniket Gore	Vice President
Basak U.	Members
Deep Prakash	General Secretary
Deepak Grover	Vice President
Deepak K. Pattanayak	Joint Secretary
Gopinath N.	President
Madan N. K.	Member
Mahesh M. Nipanikar	Member
Mahesh P. Kamble	Member
Malobika Karanjai	Member
Murli Gopal K.	Treasurer
Narendra Dhokey	Vice President
Narsinh L. Chandrachud	Technical Adviser
Niranjana Narkhade	Member
Piyush Agarwal	Member
Rajendra Sethiya	Vice President
Ramakrishnan P.	Adviser
Ramamohan T. R.	Adviser
Sachdeva J. S.	Member
Sandeep Butee	Member
Sastry I. S. R.	Member
Sidharth Singhal	Joint Secretary
Vaidya V. N.	Member
Varshney D. K.	Member
Virendra K Sud	Member



## PMAI in Exhibitions

### IMTEX 2017, Bangalore – PMAI Participation

PMAI used its booth as a pulpit to evangelise the use of PM as a superior net shaping technology for the manufacture of parts used in automotive, defence, aerospace, energy and engineering industries.

The footfall was heavy with many people hearing of PM for the first time. Several visitors brought parts for discussions. All enquiries were recorded & sent to PM part, powder & equipment makers who are PMAI members.

On behalf of those who will benefit from this initiative PMAI thanks volunteers from Pometon, Rio Tinto, Hoganas, Newmet, Innomet and Fluidtherm for manning the stall on different days.

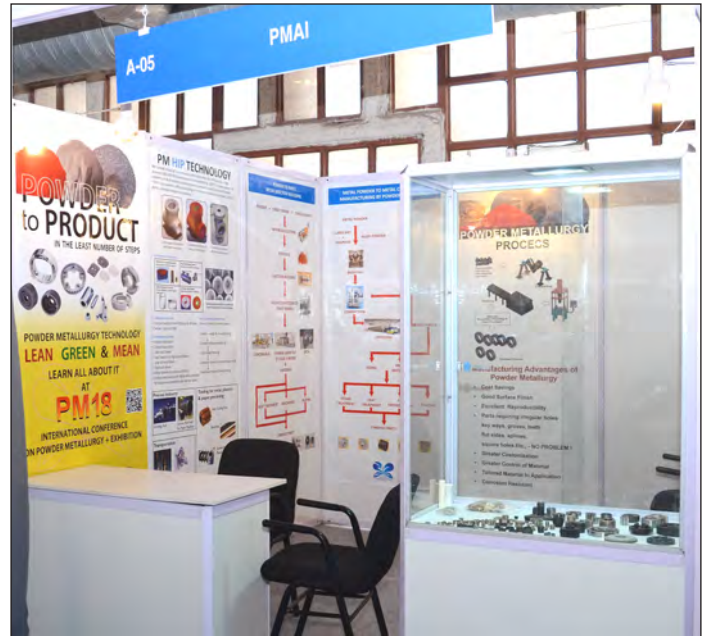


*PMAI Stall in IMTEX 2017*

### Auto Engineering Show 2017, New Delhi

While not on the scale of IMTEX this show provided PMAI an additional opportunity to spread the good word on PM. PMAI thanks the organisers, Messe Frankfurt for providing us a free complimentary stall.

A big thanks to Balraj Singh from Hoganas & Sidharth Singhal for managing the display logistics & manning the stall.



*PMAI stall in Automotive Engineering Show*

### Press Release:

#### Singhal Sintered gets ISO certification:

Congratulations on obtaining the ISO 14001:2015 certification from TUV for having implemented an environmental management system.

This is their third quality certification. They had previously obtained ISO/TS-19649:2009 & ISO 9001:2008 certification, both in 2012.



### Kymera International

ACuPowder International, ECKA Granules & SCM Metal Products were merged as one company under the name **Kymera International**. ACuPowder, ECKA Granules and SCM are all known and respected brands and so they will continue to use these names under the Kymera umbrella until its global Supply Chain Partners become familiar with the new name. Since they will be slowly introducing Kymera International to the marketplace, no immediate changes will occur including, billing (e.g. invoicing and banking), contact details such as email or packaging/labeling. All three companies will have one common website: [www.kymerainternational.com](http://www.kymerainternational.com)

## Manoj Gautam's story

I am doing my M.Tech in Energy Technology from Thapar University & working on fuel cell materials at BARC.

I am grateful to PMAI for the best student paper awarded during PM17 International conference in Feb 2017 at the Hotel Pride Delhi Aerocity.

The award was an all-expense paid attendance at the APMA 2017, International PM Conference which was held at Sheraton Hotel of Hsinchu, Taiwan from 9-11 April 2017. It was a comprehensive conference on all aspects of PM including technical sessions, poster presentation, special interest sessions and a trade exhibition. This conference was organized by Taiwan Powders and Powder Metallurgy Association (TPMA) on behalf of the Asian Powder Metallurgy Association (APMA) of which PMAI also is member.

I attended all technical sessions of my interest; green energy materials and devices especially one on Porous Fe- Cr Alloy Fabricated Support for Metal Supported SOFC. All the oral and poster presentations on SOFC were very advanced & of high quality.

Lunch and dinner were key parts of the conference as energy boosters. I enjoyed the food which was very different. I'm a vegetarian but there was lot of vegetarian food arranged by TPMA. The weather was enjoyable and wonderful in Taiwan. High speed rail (249 Km/Hr) facility was available for covering long distances between cities in Taiwan. I visited the Science Park in Taiwan which was very interesting and useful. On the last day of conference, during dinner at Sheraton hotel, traditional Taiwan dance and singing were performed by school students and other performers from Taiwan. It was the great and unique representation of Taiwan culture in the conference. The hospitality of the entire APMA team was phenomenal for researchers attending the event from all over Asia.

Finally, I would like to thank my supervisors, Dr. A. Venkatasubramanian (Assistant Professor, Thapar U) and Dr. Amit Sinha (Head, Pyro-Metallurgy Section, BARC) for their generous support and guidance in my research work.



*Manoj Gautam with  
Mr. Cl Chu, Chairman, Porite*



*With Prof. Chien-Minwang,  
National Taipei University of Technology*

## APMA 2017 at Hsinchu, Taiwan from April 9 to 11, 2017

APMA, short for the Asian Powder Metallurgy Association is a federation of national PM associations of some Asian countries. The members are;

- CPMA : China Powder Metallurgy Alliance
  - CPMS : China Powder Metallurgy Society
  - JPMA : Japan Powder metallurgy Association
  - JSPM : Japan Society of Powder Metallurgy
  - KPMA : Korean Powder Metallurgy Association
  - KPMI : Korean Powder Metallurgy Institute
  - PMAI : Powder Metallurgy Association of India
  - TPMA : Taiwan Powders & Powder metallurgy Association
- And a new entrant in 2017...

ThaiPMA : Thailand Powder metallurgy Association.

The purpose of APMA is the development of powder metallurgy through closer cooperation amongst business organizations and academic societies in Asia. APMA International Conferences are held every other year when the World PM Conference is not held. The World PM conference is held every alternative year by rotation in USA, Europe & Asia. The 2014 World Congress was held in Orlando, the 2016 World Congress was held in Hamburg & the 2018 World Congress will be held in Beijing. The APMA Conferences were held in the years in between, 2013 in Xiamen, China, 2015 in Kyoto, Japan & 2017 in Hsinchu, Taiwan. *APMA 2019 will be held in India at a location yet to be chosen.*

## APMA 2017, 10 & 11 April at Hsinchu, Taiwan

Delegate registration totaled 517 & 59 firms exhibited in the conference which was held in 7 parallel sessions covering High Performance PM Processing, PM Materials, Powder Injection Moulding, Refractory Metals & Hard Materials, Electronic & Magnetic Materials, Green Energy Materials & Devices and Additive Manufacturing.

The Conference Gala Dinner was held in the same Hotel with a cultural program of the dance forms & songs of the fishing community that inhabited Taiwan prior to Chinese settlement.



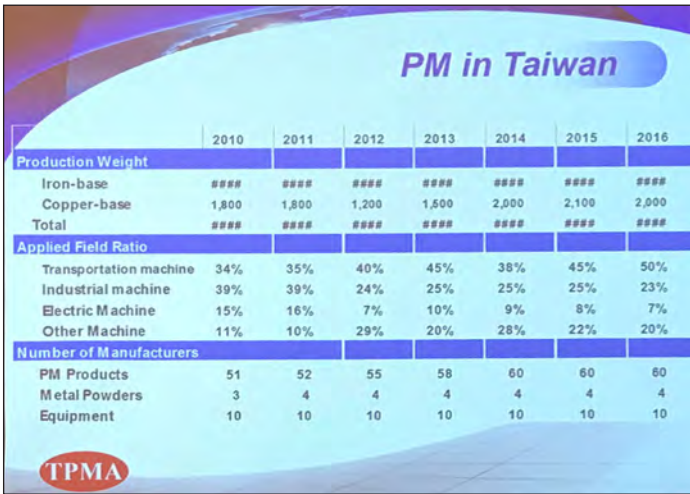


The APMA Board meeting was held to check the progress of future APMA events mainly the World Congress in Beijing being organized by CPMA & following that, the APMA 2019 conference in India being organised by PMAI.

Mr. CL. Chu President of TPMA was elected as president of APMA for a two year term & the previous APMA President Mr. Isamu Kikuchi, also President of JPMA stepped down after 9 years as President of APMA.

The Conference opened with the representatives of each member country making a report on their economy & PM related statistics.

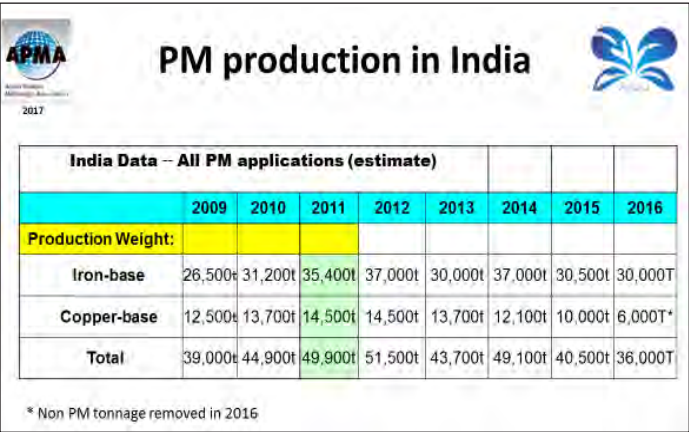
The Host Taiwan went first...



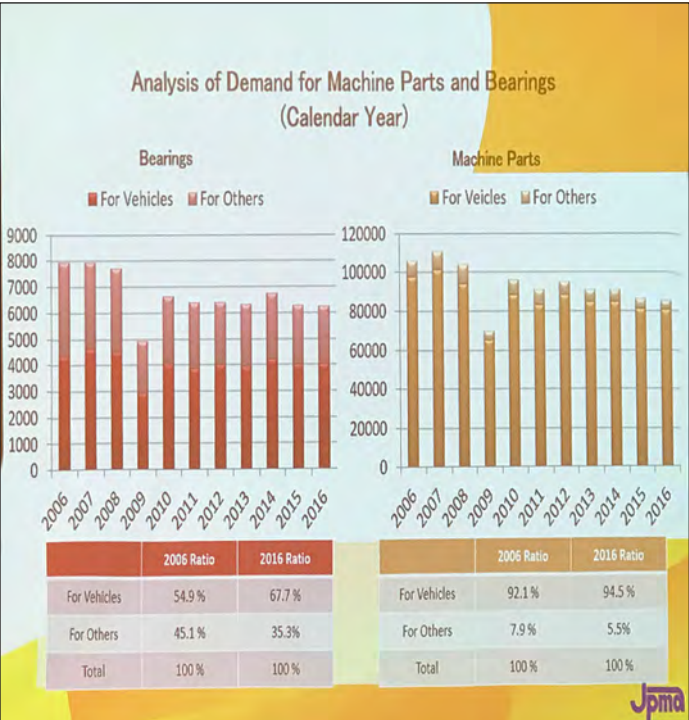
Followed by China...



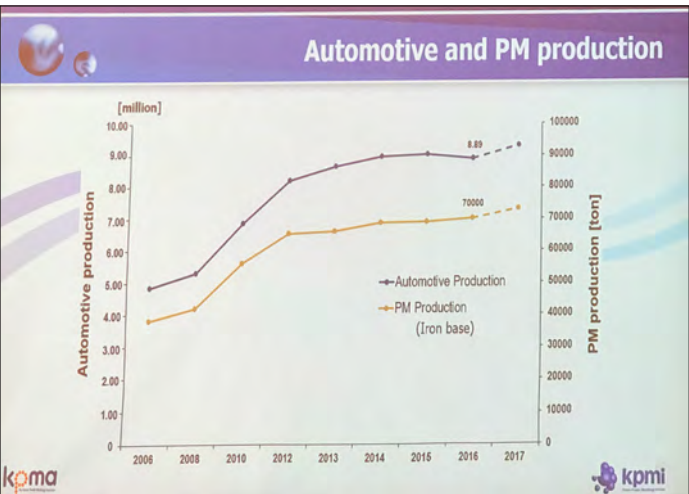
India



Japan..



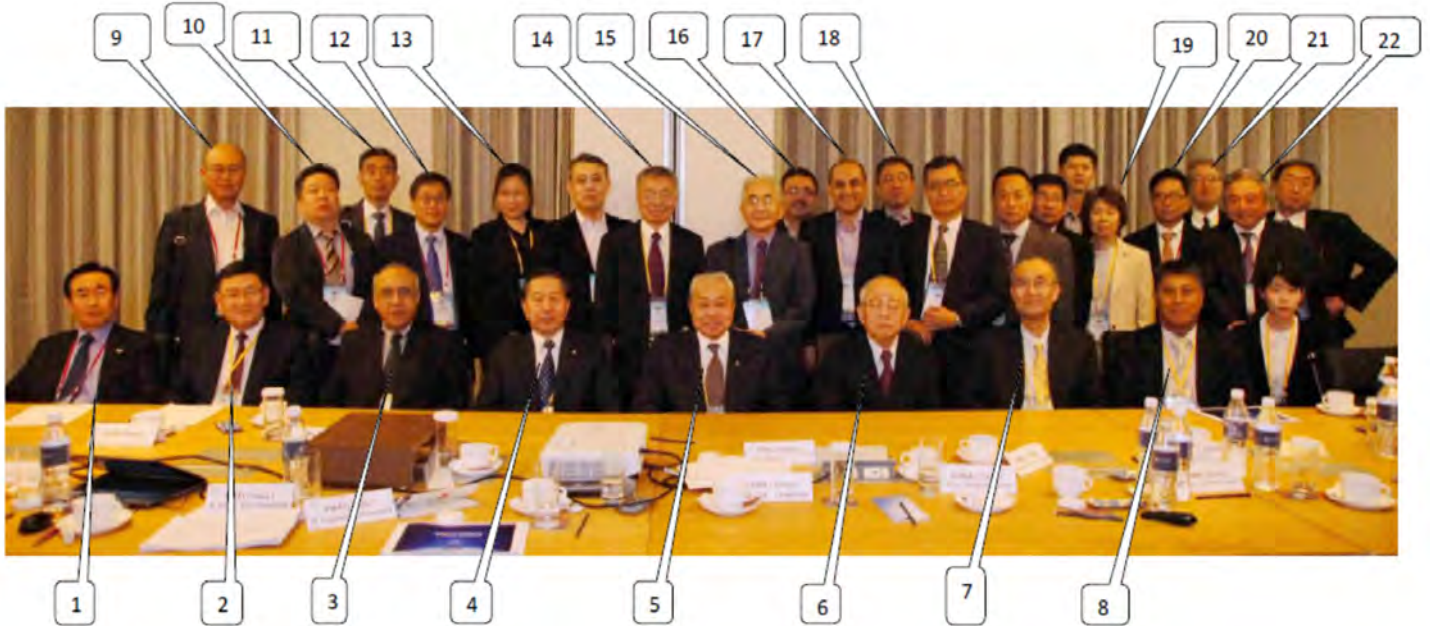
& finally, Korea



Plenary Lectures delivered on the first day were on Opportunities with Soft magnetic Composites in Electric Cars by Dr. Pennander, Hoganäs AB and on Injection Moulded Titanium Alloys for Aerospace applications by Prof. Miura, JSPM.



## APMA Board of Directors Meeting 2017 (all Directors seated)



- 1 KPMA: Sunghwan Ahn, Vice president
- 2 KPMA: Yong Jin Kim, President
- 3 PMAI: N. Gopinath, President
- 4 CPMA: Cai Rang,
- 5 APMA: Ci Chu, President
- 6 JPMA: Isamu Kikuchi, President
- 7 JSPM: Akira Kawasaki, President
- 8 Thai PMA: Ruangdaj Tongsri
- 9 KPMA: Joon Park, Director
- 10 KPMA: Hyungseop Kim / Memmber
- 11 KPMA: Changkyu Lee / President elect

- 12 KPMA: Youngdo Kim / Member
- 13 CPMA: Han Wei, Secretary General
- 14 TPMA: Sea Fue Wang, Vice President
- 15 KPMA: Jai Sung Lee, Ex. President
- 16 PMAI: Deepak Grover, Vice President
- 17 PMAI: Aniket Gore, Vice President
- 18 CPMA: Yang Yu, Vice Secretary General
- 19 JSPM: Yoko Inoue, Director Secretary General
- 20 Thai PMA: Boon Teeraprawatekul, Secretary Consul
- 21 JPMA: Tadeshi Saito, Secretary
- 22 TPMA: K. S. Hwang, Ex. President



# PMSC 17

## POWDER METALLURGY SHORT COURSE

This popular 4 day course will be hosted  
by  
Metallurgical & Materials Engineering Department  
The M. S. University of Baroda, Vadodara  
25th to 28th September, 2017  
Details at [www.pmai.in/pmssc17](http://www.pmai.in/pmssc17)



## PMAI & INDIAN CERAMIC SOCIETY are conducting a two day workshop on

"Advances in Engineering Ceramics and Composites (ACC-17)"  
Venue: Academic Complex, College of Engineering, Pune  
12 - 13 December, 2017  
(within the EH-TACAG'17)  
Details at [www.81ics-BMR2017.com](http://www.81ics-BMR2017.com)



## ANNOUNCE MENT & CALL FOR PAPERS

INTERNATIONAL CONFERENCE  
ON POWDER METALLURGY  
& PARTICULATE MATERIALS  
+ EXHIBITION

and the

44<sup>th</sup> ANNUAL TECHNICAL MEETING OF PMAI

Wed 21<sup>st</sup> to Fri 23<sup>rd</sup>, February 2018

Details & online  
registration  
at  
[www.pmai.in/pm18](http://www.pmai.in/pm18)

Several amazing awards are being  
offered during PM17 including fully  
paid attendance at a PM  
Conference and / or exhibition  
outside India as well as several  
other generous grants.  
Details at [www.pmai.in/pm18](http://www.pmai.in/pm18)

**CIDCO Exhibition Centre**  
Vashi, Navi Mumbai  
India

[www.pmai.in](http://www.pmai.in)

### Call for papers & Deadlines

• Submission of abstracts	31 Jan, 2018
• Acceptance of abstracts	05 Feb, 2018
• Submission of the complete paper	07 Feb, 2018
Only complete papers that are received by the deadline and presented at the conference will be published in the Transactions of PMAI (after peer review) and be eligible for awards	

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