

SHORT TERM COURSE ON POWDER METALLURGY: FUNDAMENTALS, APPLICATIONS AND ADVANCEMENT (1-5th JULY 2019)



ABOUT POWDER METALLURGY

Powder Metallurgy deals with fabrication of near net shape components by compacting metal powder followed by consolidation in absence of melting. The low cost of components as compared to casting-melting significantly enhances the applicability of powder metallurgical process. Industrial components such as bearings, metal filters, cams gears, sprockets, brackets etc. are fabricated through powder metallurgy. The course will provide a comprehensive outlook on the fundamentals, applications and augmentation of powder metallurgy to the participants.

COURSE OUTLINE (THEORY)

- ✦ Powder fabrication techniques
- ✦ Powder characterization
- ✦ Powder compaction
- ✦ Sintering of powder: Basics of sintering, conventional sintering and pressure assisted full density processing
- ✦ Advanced sintering techniques and nanoparticle consolidation
- ✦ Applications of sintered products

COURSE OUTLINE (PRACTICAL)

- ✦ **Characterization of powder:** Particle size measurement; Powder bulk and tap density measurement; powder flowability test; Powder morphology study using SEM
- ✦ **Powder mixing and compaction of powder:** Mixing of powder in turbula shaker mixer and compaction of powder in a hydraulic press; Green density measurement

- ✚ **Sintering:** Conventional sintering in a tube furnace
- ✚ **Characterization of sintered pellet:** Measurement of sintered density using Archimedes principle; Microstructural characterization of sintered pellet using optical and SEM; X-Ray diffraction study; Hardness study.

SPEAKERS:

- ✚ **Prof. Tapas Laha (IIT Kharagpur)**
- ✚ **Dr. M. Debta (CSIR, IMMT Bhubaneswar)**
- ✚ **Prof. D. Chaira (NIT Rourkela)**
- ✚ **Prof. A. Patra (NIT Rourkela)**
- ✚ **Prof. S. K. Karak (NIT Rourkela)**
- ✚ **Prof. S. N. Alam (NIT Rourkela)**
- ✚ **Prof. R. S. Maurya (NIT Rourkela)**

REGISTRATION PROCESS:

The registration form can be downloaded from <https://docs.google.com/document/d/1X9PnaQD5Ii7reIznsuEpw9HIft9d2SbBiJHqN-7SDE/edit>. The application form (email/post) and demand should (post) be sent to: Prof. D. Chaira, Metallurgical and Materials Engineering Department, National Institute of Technology, Rourkela-769008. Phone: 0661 –2462561, Email: debasis@nitrkl.ac.in

REGISTRATION FEES

- | | |
|--------------|--------------|
| 1. Students | : Rs. 1, 000 |
| 2. Faculty | : Rs. 2, 000 |
| 3. R & D lab | : Rs. 3, 000 |
| 4. Industry | : Rs. 4, 000 |

PAYMENT METHOD:

Payment should be made by sending an A/C Payee Demand Draft in favor of ‘**Continuing Education, NIT Rourkela**’ payable at Rourkela and reach 7 days before the starting of the program.

ACCOMMODATION

Accommodation will be provided on email request to Course coordinator or co-coordinator at Institute Guest house on payment basis and based on availability.

CONTACT DETAILS (BY POST/EMAIL)

Prof. D. Chaira (Course Coordinator)

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