

## Curriculum Vitae (CV)

### Dr. Chanchal Loha

Scientist  
Thermal Engineering Department  
CSIR-Central Mechanical Engineering  
Research Institute  
Durgapur-713209, West Bengal, India



### Contact Address:

#### Office:

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#### Residence:

MS II/B7, CMERI Colony  
Durgapur-713209, West Bengal, India.  
Email: [chanchalcmeri@gmail.com](mailto:chanchalcmeri@gmail.com)

### Area of Research:

- Fluidized Bed Gasification/Combustion
- Renewable Energy
- CFD modeling of gas-solid multiphase flow
- Post Harvest Processing of Agro crops
- Fluid Flow & Heat Transfer

### Date of Birth:

21-11-1980

### Academic Qualifications:

**PhD:** (Engineering)

**Year:** 2013

**University/Institute:** Jadavpur University (JU), Kolkata,  
West Bengal.

**Title:** Studies on Fluidized Bed Gasification of Biomass.

**M.Tech :** (Thermal  
Engineering)

**Year:** 2006;

**University/Institute:** Indian Institute of Technology,  
Varanasi, Uttar Pradesh.

**B.E:** (Mechanical Engineering)

**Year:** 2004.

**University/Institute:** Indian Institute of Engineering Science and Technology (IEST), Shibpur, Howra, West Bengal.

### Professional Experience:

08/05/2013 – 22/05/2013	Visiting Scientist, Cranfield University, UK.
26/10/2012 – 10/11/2012	Visiting Scientist, Universite Catholique De Louvain (UCL), Brussels, Belgium.
14/01/2009 – 21/01/2009	Visiting Scientist, King Monkut University of Technology Thonbury (KMUTT), Bangkok, Thailand.
2009 – till date	Scientist, CSIR-Central Mechanical Research Institute, Durgapur, West Bengal, India.
2006 – 2009	Junior Scientist, CSIR-Central Mechanical Research Institute, Durgapur, West Bengal, India.

### Dissertation supervised/ongoing:

#### PhD:

1. Mr Munna Verma (Ongoing)  
PhD Research Scholar in Mechanical Engineering Department of NIT-Patna (Roll No: 135ME02)  
Title: Biomass drying and co-gasification with coal

#### M.Tech:

2. Mr Abhishek Sit  
M.Tech student in Mechanical Engineering Department of Birla Institute of Technology, Mesra-835215, Ranchi (Roll No: ME/MEC/10005/2013)  
Title: Eulerian-Granular Multiphase CFD Modeling of Bubbling Fluidized Bed Biomass Gasifier

### Member of Professional Bodies:

- Life member of Indian Society of Heat & Mass Transfer (ISHMT).

### Award & Recognition:

- Outstanding reviewer award for the journal POWDER TECHNOLOGY, Elsevier in 2015

### Frequent Reviewer of Journals:

- Energy Conversion & Management (Elsevier publication)
- Chemical Engineering Communication (Elsevier publication)

- Renewable and sustainable Energy Review (Elsevier publication)
- Powder Technology (Elsevier publication)
- Journal of Renewable & Sustainable Energy (American Institute of Physics publication).
- Energy & Fuels (American Chemical Society publication)
- Industrial & Engineering Chemistry research (American Chemical Society publication)

## Publications:

### Journals:

1. Nandy A, **Loha C**, Gu S, Sarkar P, Karmakar MK, Chatterjee PK. Present status and overview of chemical looping combustion technology. **Renewable and Sustainable Energy Reviews** 2016; **59**: 597–619.
2. Verma M, Kumar M, **Loha C**, Sinha A, Chatterjee PK. Drying of biomass for blending with coal to utilize as fuel for clean heat and power generation. **Journal of Environmental Science & Engineering (JESE)** 2016 (accepted).
3. **Loha C**, Gu S, De Wilde J, Mahanta P, Chatterjee P K. Advances in mathematical modeling of fluidized bed gasification. **Renewable and Sustainable Energy Reviews** 2014; **40**: 688–715.
4. **Loha C**, Chattopadhyay H, Chatterjee P K. Three dimensional kinetic modeling of fluidized bed biomass gasification. **Chemical Engineering Science** 2014; **109**: 53–64.
5. **Loha C**, Chattopadhyay H, Chatterjee P K. On the effect of coefficient of restitution in Euler-Euler CFD simulation of fluidized bed hydrodynamics. **Particuology** 2014; **15**: 170-177.
6. **Loha C**, Chattopadhyay H, Chatterjee P K. Euler-Euler CFD modeling of fluidized bed: influence of specular coefficient on hydrodynamic behavior. **Particuology** 2013; **11**: 673–680.
7. **Loha C**, Chattopadhyay H, Chatterjee P K. Energy generation from fluidized bed gasification of rice husk. **Journal of Renewable and Sustainable Energy** 2013; **5**: 043111-1-11.
8. **Loha C**, Chattopadhyay H, Chatterjee P K. Assessment of drag models in simulating bubbling fluidized bed hydrodynamics. **Chemical Engineering Science** 2012; **75**: 400–407.
9. **Loha C**, Das R, Choudhury B, Chatterjee P K. Evaluation of Air Drying Characteristics of Sliced Ginger (*Zingiber officinale*) in a Forced Convective Cabinet Dryer and Thermal Conductivity Measurement. **Journal of Food Processing & Technology** 2012; **3**: 1000160.
10. **Loha C**, Chattopadhyay H, Chatterjee P K. Thermodynamic analysis of hydrogen rich synthetic gas generation from fluidized bed gasification of rice husk. **Energy** 2011; **36**: 4063–4071.
11. **Loha C**, Chatterjee P K, Chattopadhyay H. Performance of fluidized bed steam gasification of biomass – Modeling and experiment. **Energy Conversion and Management** 2011; **52**: 1583–1588.

### Conference/Workshop/Symposium:

- 1 Dutta S, Sadhukhan AK, Nandy A, **Loha C**, Chatterjee PK. Numerical study of fluidization behavior in rotary fluidized bed in static geometry or vortex chamber fluidized bed. **17<sup>th</sup> ISME Conference on Advances in Mechanical Engineering, IIT Delhi, New Delhi, India.** October 3–4, 2015. Paper No: ISME-T-068.
- 2 Kumar M, Verma M, Sinha A, **Loha C**, Chatterjee PK. Determination of activation energy and effective moisture diffusivity for mango leaves in packed bed drying. **17<sup>th</sup> ISME Conference on Advances in Mechanical Engineering, IIT Delhi, New Delhi, India.** October 3–4, 2015. Paper No: ISME-T-010.
- 3 Sit A, **Loha C**, Chattopadhyay H, Roy AK, Chatterjee PK. Development of CFD model for fluidized bed biomass gasifier. **23<sup>rd</sup> National and 1<sup>st</sup> International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2015). ISRO, Thiruvananthapuram, India.** 17-20 December, 2015. Paper No: IHMTTC2015-25.
- 4 Nandy A, **Loha C**, Roy PC, Chattopadhyay H, Sarkar P, Chatterjee PK. Hydrodynamic modeling of Ilmenite particles in a bubbling fluidized bed fuel reactor for chemical looping combustion (CLC) of coal. **23<sup>rd</sup> National and 1<sup>st</sup> International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2015). ISRO, Thiruvananthapuram, India.** 17-20 December, 2015. Paper No: IHMTTC2015-47.
- 5 **Loha C**, Chatterjee P K, Mondal B. Hydrodynamic modeling of a fluidized bed with ceramic particles for stuccoing on wet layer of Ceramic Shell for Investment Casting Process. **National Workshop on Investment casting Process Technology (NWIC-2015). CSIR-CGCRI, Kolkata, India. February 14, 2015.**
- 6 Verma M, **Loha C**, Sinha A N, Chatterjee P K. Biomass drying for co-firing of coal to reduce the pollutant emission. **National Conference on Environmental Issues and Food Security in India. Foundation of Science and Environment, Kolkata, India. 10<sup>th</sup> Aug, 2014.**
- 7 **Loha C**, Chattopadhyay H, Karmakar M K, Chatterjee P K. Studies on Euler-Euler CFD modeling of fluidized bed hydrodynamics. **22<sup>nd</sup> National and 11<sup>th</sup> ISHMT-ASME Heat and Mass Transfer Conference. IIT-Kharagpur, India. Dec 28-31, 2013.**
- 8 **Loha C**, Chattopadhyay H, Chatterjee P K. Numerical simulation of bubble formation in a jetting fluidized bed. **39<sup>th</sup> National Conference on Fluid Mechanics and Fluid Power. SVNIT Surat, Gujarat, India. Dec 13-15, 2012.**
- 9 **Loha C**, Karmakar M K, Chatterjee P K. Parametric study and thermodynamic analysis of allothermal biomass gasification in a fluidized bed reactor. **21<sup>st</sup> National and 10<sup>th</sup> ISHMT-ASME Heat and Mass Transfer Conference. IIT-Madras, India. Dec 27-30, 2011.**
- 10 Karmakar M K, **Loha C**, Chatterjee P K. Studies on fluidization behavior of sand and biomass. **19<sup>th</sup> European Conference and Exhibition – From Research to Industry and Market. Berlin, Germany. June 6-10, 2011.**
- 11 Ruj B, **Loha C**, Chatterjee P K, Datta A B, Goel A K. Plasma, Gasification-An advanced technology for plastic waste disposal. **International Conference on Energy Engineering and Eco-balance (ICEEE 2009), MITR, Pune, India. February 16-18, 2009.**
- 12 Karmakar M K, **Loha C**, Chatterjee P K, Datta A B. Production of Hydrogen Rich Syngas through Thermo Chemical Gasification of Biomass. **International Conference on Energy Engineering and Eco-balance (ICEEE 2009), MITR, Pune, India.**

**February 16-18, 2009.**

- 13 Chandra P, **Loha C**, Choudhury B, Chatterjee P K. Development of Solar-Biomass/Electric Hybrid Dryer for Ginger, Turmeric and Chilli to improve Farmers Economy in North East. **International Conference on Energy Engineering and Eco-balance (ICEEE 2009), MITR, Pune, India. February 16-18, 2009.**
- 14 **Loha C**, Choudhury B, Chatterjee P K, Datta A B. Development of tray dryer for processing ginger for the rural people of Mizoram. **International Drying Symposium, Hyderabad, India. November 9 -12, 2008, pp.1358-1362.**
- 15 Karmakar M K, **Loha C**, Chatterjee P K, Datta A B. Fluidized bed gasification of rice husk for generation of hydrogen rich syngas. **National Seminar on Recent Trends in Renewable Energy Sources and Technologies (RREST), HNB Garhwal University, Srinagar(Garhwal), Uttrakhang, India. March 26 –28, 2008, pp. 149-154.**
- 16 **Loha C**, Datta A B, Chatterjee P K. Numerical investigation of Hydrogen combustion and NO<sub>x</sub> formation. **International Seminar on Clean Energy, CMERI, Durgapur, India. October 17 –18, 2007.**
- 17 **Loha C**, Mondal S.S. Numerical Study of Heat and Mass Transfer from a Methane/ Air Diffusion Flame Impinging on a Flat Plate. **National Conference on Advances in Heat Transfer and Fluid Flow, Aligarh Muslim University, India. September 16 – 17; 2006:231-37.**

#### **Book Chapter:**

**Loha C**, Chattopadhyay H, Chatterjee P K. Book Chapter on “**Modeling of Fluidized Bed Gasification**” in the **Volume 7: Bionergy** of the multi-volume set book “**Energy Science and Technology (In 12 Vols)**” published by Studium Press LLC, USA. Year: 2015 (ISBN: 1-626990-68-9).

#### **Patent:**

- Chatterjee P K, **Loha C**, Choudhury B, Chandra P. **Rotary drum washer for ginger and turmeric.** Indian Patent (Filed on 28-06-2010, Reference No. 1592DEL2010).
- Chatterjee P K, **Loha C**, Choudhury B, Chandra P. **Cabinet dryer for ginger.** Indian Patent (Filed on 09-07-2009, Reference No. 0868DEL2011).
- Chatterjee PK, Karmakar MK, **Loha C**, Chakraborty B, Mukherjee A, Sarkar P, Kumar M, Datta S, Sahu S, Adak A, Dubey AK, Dutta S. **Flexible cold model setup for developing chemical looping combustion system.** Indian Patent (Filed on 18-02-2016).

#### **Copyright:**

- Chatterjee P K, **Loha C**, Karmakar M K, Chakraborty B. **Drawing of bubbling fluidized bed coal gasifier.** Ref. No. CSIR-CMERI/IPMG/COPYRIGHT/2014/6, Dated: 02-04-2014.
- Chatterjee P K, Karmakar M K, **Loha C**. **Drawing of lab-scale circulating fluidized bed coal gasifier.** Ref. No. CSIR-CMERI/IPMG/COPYRIGHT/2014/7, Dated: 02-04-2014.
- Chatterjee P K, **Loha C**, Choudhury B, Chandra P. **Drawing of cabinet dryer for**

**ginger.** IPMG/COPYRIGHT/2009/1, Dated: 13-04-2009.

- Chatterjee P K, Loha C, Choudhury B, Chandra P. **Drawing of ginger washing unit with filtration and recirculation of water.** Ref. No. IPMG/COPYRIGHT/2008/5, Dated: 18-11-2008.
- Chatterjee P K, Ruj B, Loha C. **Plastic waste disposal and generation of syngas unit.** Ref. No. IPMG/COPYRIGHT/2008/4, Dated: 18-11-2008.

### Technology Transferred:

- **“Cabinet Dryer (CD-50)”** to Ms Joint Enterprise Company, SSI Unit, Durgapur Industrial Estate, Plot No-P/10, J P Avenue, Durgapur-713212, West Bengal, India.
- **“Rotary drum washer for ginger and turmeric (RDW-500 KPH)”** to Ms Joint Enterprise Company, SSI Unit, Durgapur Industrial Estate, Plot No-P/10, J P Avenue, Durgapur-713212, West Bengal, India. April 2009.

### Ongoing / Completed Projects:

Sl No	Project Title	Involvement	Sponsor	Year	Value (Rs. in Lakh)
1	Semi-automated ginger processing technology	Co-PI	CSIR	2016-2017	35.00
2	“Circulating fluidized bed coal gasification” under the “Clean Coal Technology (TAP COAL)” mission of CSIR 12 FYP Project.	PI	12 <sup>th</sup> FYP Project, CSIR	2013-2016	674.79
3	CFD modeling of gas-solid multiphase flow with chemical reactions of fluidized bed gasification	PI	Institute Project, CSIR-CMERI	2011-2014	52.00
4	Distributed Power Generation through Fluidized Bed Biomass Gasifier integrated with gas engine	Project Team Member	Institute Project, CSIR-CMERI	2008-1011	19.35
5	Fluidized bed gasification of biomass for generation of hydrogen	Project Team Member	NMITLI Project, CSIR	2004-2007	52.00
6	Development of post harvest processing technology for ginger, turmeric, chili and its implementation for augmenting regional economy of Mizoram	Project Leader	RSWNET Project, CSIR	2008-2013	300.00
7	Development of post	Project Leader	RSWNET Project,	2008-	200.00

	harvest processing technology and to enhance the farmer's economy of Arunachal Pradesh		CSIR	2013	
8	Development of tray dryer and its implementation	PI	Institute Project, CSIR-CMERI	2007-2008	14.02
9	International collaboration on computational modeling of fluidized bed systems for clean energy technologies ( <b>Grant No. 312261</b> )	Project Leader	European Union FP 7	2012-2016	