

Dr. Gajanan Dattarao Surywanshi

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OBJECTIVE:

To get onto a position where I can apply my knowledge that I have procured and gained practical experience in meeting the challenges. Also to seek a meaningful and challenging position that gives an opportunity to implement my skills in the infrastructure domain.

PROFILE & STRENGTHS:

- Focused and diligent with impeccable work habits and strong analytical and problem solving skills. Cogent written and verbal communication skills.

RESEARCH INTERESTS:

- Chemical and calcium looping combustion technologies
- CO₂ capture and Utilization
- Power plant modelling and simulation
- Process intensification
- Flow-chemistry
- Computational fluid dynamics

ACADEMIC BACKGROUND:

A] Doctor of Philosophy (Ph.D): 2016-2021.

Name of Institute : National Institute of Technology Warangal (**NITW**).

Branch : Chemical Engineering.

Submitted PhD thesis at Chemical Engineering Department, National Institute of Technology, Warangal (India).

Coursework subjects: Chemical Looping Systems for Fossil Energy Conversion, Applied Numerical Methods in Chemical Engineering and Advanced Computational Fluid Dynamics.

Ph.D. thesis details:

Title: 4-E (Energy, Exergy, Ecological and Economic) analyses of Chemical-Looping Combustion based Coal Fired Power Plants for CO₂ Capture and Utilization.

Supervisor: Dr. P.V. Suresh, Associate Professor, Department of Chemical Engineering, National Institute of Technology Warangal.

Description:

- 4-E (Energy, Exergy, Ecological and Economic) analyses of CLC based Indian coal fired power plant with subcritical, supercritical and ultra-supercritical steam boilers for efficient CO₂ capture.

- 4-E analyses of CLC based coal fired power plant with different oxygen carriers.
- 4-E analyses of CLC based coal fired power plant for hydrogen and power co-generation system.
- 4-E and life cycle analysis on the integration of the CO₂ utilization plant (formic acid, methane, methanol and dimethyl ether) with CLC based power plant for hydrogen and power co-generation system.

BJ Master of Technology (M.Tech.): 2013-2015

Name of Institute : National Institute of Technology Warangal (NITW).
Branch : Chemical Engineering.
Specialization : Computer Aided Process Equipment Design.
Percentage of marks/CGPA: 7.94 CGPA, First Division.

M.Tech thesis details:

Title: Optimization studies on Heat Transfer Studies of Nano-Fluids in Corrugated Plate Heat Exchangers.

Supervisor: Prof. R.C. Sastry, Professor, Department of Chemical Engineering, National Institute of Technology Warangal.

Description:

- Experimental work on corrugated plate heat exchanger.
- CFD simulation in Fluent.
- Optimization of (1) corrugation angle, (2) channel spacing's, (3) nano fluid and (4) nano fluids volume concentration by calculating heat transfer rate to pressure drop ratio.

CJ Bachelor of Engineering (B.E.):

Name of Institute : MGMs Jawaharlal Nehru Engineering College, Aurangabad.
Branch : Chemical Engineering.
University : Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
Percentage of marks/CGPA: 62.68% average, First Division.

B.E. thesis details:

Title: Design of feedback control system for liquid level tank.

Supervisor: Mr. Sandip Mundhe, Assistant Professor, Department of Chemical Engineering, MGMs Jawaharlal Nehru Engineering College, Aurangabad.

Description:

- Feedback controller was used to control level of single tank.
- The dynamic behavior of liquid level was studied.

PROJECT:

Worked on the Science and Engineering Research Board (SERB) sponsored project as Junior Research Fellow (JRF) for two years and Senior Research Fellow (SRF) for one year at Department of Chemical Engineering, National Institute of Technology Warangal.

Project Title: Theoretical and Experimental Studies on Chemical Looping Combustion of Indian coals.

Under the Guidance of Dr. P. V. Suresh, Associate Professor, Department of Chemical Engineering, National Institute of Technology Warangal.

Duration: 04-11-2015 to 12-12-2018 (3 years and 38 days).

WORK EXPERIENCE:

1. Application Engineer

Currently working as Application Engineer on flow-reactor and flow-chemistry technology at Proburgeon Pvt. Ltd., Pune (India).

Duration: From 01-01-2021 to date (9 months).

2. Trainee Supervisor Production

Worked as Trainee Supervisor Production at Godavari Drugs Ltd., Nanded (India). **Duration:** 16-08-2012 to 02/08/2013 (11 months and 18 days).

JOURNALS:

1. SS Sikarwar, R Vooradi, VS Patnaikuni, M Kakunuri, **GD Surywanshi**, A novel thermally stable Fe₂O₃/Al₂O₃ nanofiber-based oxygen carrier for chemical-looping combustion, Chemical Papers, 2022. <https://doi.org/10.1007/s11696-022-02129-9>. (SCI impact factor: 2.097).
2. **Surywanshi GD**, Patnaikuni VS, Vooradi R, Kakunuri M, CO₂ capture and Utilization from Supercritical Coal Direct Chemical Looping Combustion Power plant - Comprehensive analysis of different case studies, Applied Energy, 304, 117915, 2021. <https://doi.org/10.1016/j.apenergy.2021.117915>. (SCI impact factor: 9.746).
3. Pillai BBK, **Surywanshi GD**, Patnaikuni VS, Anne SB, Vooradi R, A novel calcium looping-integrated NGCC power plant configuration for carbon capture and utilization - Comprehensive performance analysis, International Journal of Energy Research, 46(2), 900-922, 2021. <https://doi.org/10.1002/er.7212>. (SCI impact factor: 5.164).
4. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, 4-E and life cycle analyses of a supercritical coal direct chemical looping combustion power plant with hydrogen and power co-generation, Energy, 217, 119418, 2021. <https://doi.org/10.1016/j.energy.2020.119418>. (SCI impact factor: 6.082).
5. Sikarwar SS, **Surywanshi GD**, Patnaikuni VS, Kakunuri M, Vooradi R, Chemical looping combustion integrated Organic Rankine Cycled biomass-fired power plant – Energy and exergy analyses, Renewable Energy, 155, 931-949, 2020. <https://doi.org/10.1016/j.renene.2020.03.114> (SCI impact factor: 6.274).
6. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Energy and exergy analyses of Performance analysis of chemical looping combustion based 660 MW_e supercritical coal fired power plant, International Journal of Exergy, 13(1), 14-33, 2020. <https://doi.org/10.1504/IJEX.2020.10024695> (SCI impact factor: 0.958).
7. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, 4-E analysis of chemical looping combustion based subcritical, supercritical and ultra-supercritical coal-fired power plants, Energy Conversion and Management, 200, 112050, 2019. <https://doi.org/10.1016/j.enconman.2019.112050> (SCI impact factor: 8.208).
8. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Formic acid synthesis – A case study of CO₂ utilization from coal direct chemical looping combustion power plant,

Energy Sources Part-A: Recovery, Utilization, and Environmental Effects, 2019. <https://doi.org/10.1080/15567036.2019.1649325>. (SCI impact factor: 1.184).

9. Pillai BBK, **Surywanshi GD**, Patnaikuni VS, Anne SB, Vooradi R, Performance analysis of a double calcium looping-integrated biomass-fired power plant: exploring a carbon reduction opportunity. International Journal of Energy Research, 43(10), 5301–5318, 2019. <https://doi.org/10.1002/er.4520>. (SCI impact factor: 3.741).
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CONFERENCES:

International:

1. Sikarwar SS, **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Anne SB, Vooradi R, Interaction between Coal-Ash and Iron-Ore in Chemical Looping Combustion, International Conference on Sustainable Energy and Green Technology 2019 (SEGT 2019), Millennium Hilton Bangkok, Bangkok, Thailand, 11-14 December 2019.
2. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Energetic and exergetic analysis of chemical looping combustion integrated coal-fired power plant using different oxygen carriers, International Conference on Sustainable Energy and Green Technology 2019 (SEGT 2019), Millennium Hilton Bangkok, Bangkok, Thailand, 11-14 December 2019.
3. Pillai BBK, Aband M, **Surywanshi GD**, Patnaikuni VS, Anne SB, Vooradi R, Integration of NGCC power plant with dry reforming of natural gas for dimethyl ether production: CO₂ utilization approach, 11th International Exergy, Energy and Environment Symposium (IEEES-11), Chennai, India, 14-18 July 2019.
4. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Analysis of Chemical Looping and Calcium Looping Combustion Integrated Power Plant for Hydrogen and Power Co-generation, 11th International Exergy, Energy and Environment Symposium (IEEES-11), Chennai, India, 14-18 July 2019.
5. Pillai BBK, **Surywanshi GD**, Patnaikuni VS, Anne SB, Vooradi R, Energy and Exergy Analysis of a Natural Gas Fired Combined Cycle Power Plant Integrated with Calcium Looping for CO₂ Capture in Indian Climatic Conditions, 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16 February, 2019.
6. Sikarwar SS, **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Anne SB, Vooradi R, Heat Integration of Chemical Looping Combustion based Biomass-Fired Power Plant, 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16 February, 2019.
7. Sharma DK, **Surywanshi GD**, Patnaikuni VS, Computational Modelling of Ash Slagging In Chemical Looping Combustion of High-Ash Indian Coal, 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16 February, 2019.
8. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Chemical Looping Combustion based Advanced Ultra-Supercritical Coal Fired Power Plant, 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16 February, 2019.
9. Sikarwar SS, **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Anne SB, Vooradi R, Thermodynamic Analysis of Chemical Looping Combustion Integrated Sugarcane Bagasse

- based Biomass Power Plant, International Conference on Advances and Challenges for Sustainable Ecosystems (ICACSE 2018), NIT Tiruchirappalli, India, 6-8 December, 2018.
10. **Surywanshi GD**, Pillai BBK, Maheshwari M, Venkatesh K, Patnaikuni VS, Vooradi R, Anne SB, Synthesis of Formic Acid – A Case Study of CO₂ Utilization from Coal Direct Chemical Looping Combustion Power Plant, International Conference on Advances and Challenges for Sustainable Ecosystems (ICACSE 2018), NIT Tiruchirappalli, India, 6-8 December, 2018.
 11. Pillai BBK, **Surywanshi GD**, Patnaikuni VS, Anne SB, Vooradi R, Energy analysis of sugarcane bagasse based biomass power plant integrated with calcium looping technology, 10th International Energy, Exergy and Environment Symposium (IEEES-10), Katowice, Poland, July 1-4, 2018.
 12. **Surywanshi GD**, Pillai BBK, Patnaikuni VS, Vooradi R, Anne SB, Energy and Exergy Analysis of Supercritical Coal Fired Power Plant Integrated with Chemical Looping Combustion, 10th International Energy, Exergy and Environment Symposium (IEEES-10), Katowice, Poland, July 1-4, 2018.
 13. **Surywanshi GD**, Patnaikuni VS, Coal Fired Power Plant with Chemical Looping Combustion, International Conference on Advanced Technology Innovation (ICATI 2017), Samui, Thailand, 25-28 Jun 2017.
 14. Sreedhara BR, **Surywanshi GD**, Varun S, Sastry RC, CFD simulation studies in wavy corrugated channels in plate heat exchangers, International Conference on New Frontiers in Chemical, Energy and Environmental Engineering, INCEEE-2015.

National:

1. Sharma DK, **Surywanshi GD**, Patnaikuni VS, Computational modeling of ash slagging in oxy-coal combustion of low rank coal, A Two-Day National Conference on Dynamics of Interfaces in Multiphase Systems, NIT Warangal, India, December 15-16, 2018.
2. Varun S, **Surywanshi GD**, Sastry RC, Sreedhara BR, CFD simulation studies in wavy corrugated channels of plate heat exchangers, 67th Annual Session of Indian Institute of Chemical Engineers, CHEMCON – 2014, page no. 938-939, Dec 27-30, 2014.
3. **Surywanshi GD**, Sonwane SS, Phytoremediation, Student Chemical Engineering Congress (SCHEMCON-2010), RVR & JCCE Guntur, India.

WORKSHOPS ATTENDED:

Global Initiative of Academic Networks (GIAN):

1. “Computational fluid dynamic modeling of fluidized beds (Course Code: 171036B10)”, GIAN, held at NIT Warangal, 12-16 November 2018.
2. “Advanced computer modelling of chemical & biochemical processes (Course Code: 171036B06)”, GIAN, held at NIT Warangal, 3-7 September 2018.
3. “Chemical looping combustion for CO₂ capture (Course Code: 171036B08)”, held at National Institute of Technology Warangal, 20-24 November 2017.
4. “Computer aided simulation of chemical processes (Course Code: 161036B01)”, GIAN, held at NIT Warangal, 22-27 November 2016.
5. “Crystallization systems engineering (Course Code: 161036B03)”, GIAN, held at NIT Warangal, 5-9 September 2016.

Other Workshops:

1. "Fluid Flow and Heat Transfer in Micro-channels and Nano-channels", SERB, DST, held at GVP College of Engineering, Visakhapatnam, 10-12 August 2016.
 2. "Application of Process Simulators in Chemical and Bioprocess Engineering (APSCBE-2016)", held at NIT Warangal, 30 May - 3 June 2016.
 3. "Advanced flow reactors", TEQUIP-II, held at NIT Warangal, 4 October 2013.
 4. "SCILAB spoken tutorial workshop", under the National Mission for Education through ICT, MHRD, Govt. of India, held at IIT Bombay, 3 March 2012.
 5. "Workshop on plastic technology", held at Maharashtra Institute of Technology Aurangabad, 19-20 March 2010.
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SOFTWARE SKILL:

ANSYS Fluent v19.0
ANSYS Workbench v19.0
Aspen Plus v10.0
MFix v18.1.5
MATLAB v10
COMSOL Multiphysics v5.3

COMPUTER PROFICIENCY

- Maharashtra Board for Computer Training "Certificate Course in Hardware".
 - Maharashtra State Computer Course in Information Technology (MS-CIT)
 - Knowledge of MS-Office 03/07/10/13.
 - Operating Platform: Windows 8/8.1/7/XP/Vista
 - Language Known: C/C++
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Activities performed:

1. Served as volunteer for the 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16th February, 2019.
2. Executive member of the Students council of Chemical Engineering Association (ChEA) at NIT Warangal during 2018-2019.
3. Assisted during the lab sessions for the first simulation workshop on Aspen and CFD (ANSYS) for Chemical Engineering Students & Scholars (ACCESS) 2018, IT Warangal, India, 4-15 June 2018.

Achievements:

1. Secured first position in the "Badminton" Intramural Competitions, NIT Warangal, India, during the academic year 2019-2020.
2. Awarded best paper presentation award at 2nd International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE- 2019), NIT Warangal, India, 15-16th February, 2019.

3. Secured first position in the “Badminton” Intramural Competitions, NIT Warangal, India, during the academic year 2018-2019.
4. Secured third position in “Badminton (boys)” competitions organized by Chemical Engineering Association (ChEA), NIT Warangal, India, during the academic year 2018-2019.
5. Awarded second best paper presentation award at National Level Technical Symposium “KRATOS-2K13”, MPGI Group of Institutions, Nanded, India, 6-7 April 2013.
6. Secured second position in the “Robo-Race” event of AWUT 2012, A National level Extravaganza, JNEC Aurangabad, India, 23-25 March 2012.

Referee’s Contact Details:

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PERSONAL DETAILS

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Contact No. : +91-8121594403
Birth date : 05-07-1989
Gender : Male
Marital Status : Married
Nationality : Indian
Languages Known : English, Hindi and Marathi

DECLARATION

- All the statements made in the application are true and correct to best of my knowledge and belief.
- I assure that I will confidently accomplish the job given to me.

Place: Gotebörg
Date: 06-04-2022

Signature