

Abinaya Sampath

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EDUCATION

University of Illinois at Urbana-Champaign
Department of Chemical Engineering

Urbana-Champaign, USA
2016-Current

Ph.D. in Chemical Engineering (Advised by Dr. David W. Flaherty)

Samuel W. Parr Graduate Fellow

2016-2017

CGPA: 3.79/4

Indian Institute of Technology Madras

Chennai, India

Department of Chemical Engineering

2012-2016

B.Tech (Honors) in Chemical Engineering with Minor in Operations Research

CGPA: 8.89/10

GPA (Professional Major Theory): 9.03/10

Jawahar Higher Secondary School

Neyveli, India

Central Board of Secondary Education: Class X and XII

1998-2012

Class XII: 94.8% | Secured 3rd position amongst class of 60 students

Class X: CGPA of 9.8/10

PUBLICATIONS

Abinaya Sampath, Siwei A. Chang, David W. Flaherty ‘Catalytic Hydrogen Transfer and Decarbonylation of Aromatic Aldehydes on Ru and Ru Phosphide Model Catalysts’ *Submitted*, J. Phys. Chem. C

Siwei A. Chang, **Abinaya Sampath**, David W. Flaherty ‘Selective Dehydrogenation over P Modified Ru’ *To be submitted*

PRESENTATIONS

Abinaya Sampath, David W. Flaherty ‘Mechanistic Insights into Catalytic Transfer Hydrogenation and Decarbonylation of Aromatic Aldehydes on P_x-Ru(0001)’ AVS 65th International Symposium; October 21st; Long Beach, CA - *Oral presentation*

Abinaya Sampath, Siwei A. Chang, David W. Flaherty ‘Catalytic Transfer Hydrogenation and Decarbonylation of Aromatic over P_x-Ru(0001)’ Catalysis Club of Chicago Symposium; May 11th; Naperville, IL - *Poster presentation*

PROJECTS

Graduate Thesis Research Project under Dr. David W. Flaherty

UIUC, USA

Influence of Phosphorus addition to Pd(111) in cyclohexene dehydrogenation

October 2017-Current

- Synthesizing P_x-Pd(111) with enhanced selectivity towards dehydrogenation
- Studying changes in activation barrier for C-H bond rupture relevant to dehydrogenation

Graduate Thesis Research Project under Dr. David W. Flaherty

UIUC, USA

Catalytic hydrogen transfer of aromatic aldehydes on P_{0.4}-Ru(0001)

August 2016-September 2017

- Reported increase in decarbonylation selectivity of furfural and benzaldehyde
- Mechanistic study of catalytic transfer hydrogenation in the absence of external hydrogen source

Undergraduate Thesis Project under Dr. Sreenivas Jayanti

IIT Madras, India

Torrefaction of Palm Empty Fruit Bunch (EFB)

August 2015-May 2016

- Optimized torrefaction process of EFB, in terms of calorific value, hydrophobicity, density and O/C ratio
- Devised mechanism for pelletization of EFB and high ash coal to study binding properties of the lignocellulosic biomass

Undergraduate Research Project under Dr. Sreenivas Jayanti

IIT Madras, India

Co-gasification characterization of biomass and coal

December 2014-April 2015

- Worked on kinetic modeling of the gasification of biomass and coal in the presence of Carbon dioxide
- Analyzed ash composition of samples of biomass blended with coal using Thermogravimetric Analysis

Undergraduate Research Project under Dr. T. Renganathan

IIT Madras, India

Carbon dioxide capture using adsorption by solid sorbents

May-July 2014

- Determined the mode of wet impregnation method to improve potassium carbonate (adsorbent) coating on activated carbon (sorbent support)
- Performed experiments in the fluidized bed reactor reporting the quantity of carbon dioxide adsorbed by sorbents

TEACHING EXPERIENCE

Teaching assistant for undergraduate course ‘Mass Transfer Operations’ at UIUC

August 2017-December 2018

PROFESSIONAL EXPERIENCE

Valmet Chennai Private Limited¹

Chennai, India

Comparative study of Technologies in Boilers - Grate and Circulating Fluidized bed

May-July 2015

- Reported technical and economic factors governing the choice of circulating fluidized bed and grate for waste incineration specific to Europe, China and Japan
- Studied Green House Gases (GHG) emissions and their control systems corresponding to different boiler technologies

Techno-economic feasibility study of palm empty fruit bunch (EFB) as fuel

- Technical comparative study done on the pretreatment processes of Steam Explosion and Torrefaction of EFB
- Proposed pelletizing unit layout with co-production of pellets and lignocellulosic ethanol from EFB at palm mill, successfully promoting it to R&D team in Finland
- Performed techno-economic feasibility analysis of EFB pellets manufacture in palm oil mill (With focus on market across globe and potential consumer demand in Asia)

SKILLS

Scientific Tools and Simulation Packages: MATLAB, LabVIEW, Aspen Plus, Ansys Fluent, Good working skills in Origin, MS office package

Programming Languages: C, C++, R, HTML-CSS

Language Skills: English, Hindi, Tamil (Mother Tongue)

POSITIONS OF RESPONSIBILITY

National Service Scheme, IIT Madras

Chennai, India

Member, Managerial Team

2013-2014

- Collaborated with NGOs like Blue Cross and Banyan to initiate socially relevant projects catering to academic requirements of around 300 volunteers
- Ensured timely review and completion of three such projects on a good note

Nehru Middle School

Chennai, India

Project Representative, Project Nehru Middle School

2014-2015

- Led a team of 10; conducted a six months long aptitude training program for students of grade 8
- Co-Authored & published a book for training on ‘Personality Development’ for the NGO ‘Gold Heart Foundation’

SOCIAL INITIATIVES AND COMMUNITY ENGAGEMENT

- Initiated self-sustaining fund raising from IIT Madras through collection drives of newspapers in Hostels for tuition centers for free education by the NGO ‘Gold Heart Foundation’ *2014*
- Ideated and organized a cleanliness drive with a team of 40 at the Elliot’s beach in Chennai (First of its kind student initiative at IIT Madras) *2013*
- Camped in three remote villages in state of Tamil Nadu with NGO ‘Vidyarambam’ to study the decentralized free education system provided by them *2012*
- Pioneered efforts in revamping a garden within campus of IIT Madras *2013-2014*

¹Formerly Metso Power India Private Limited