Curriculum-Vitae

Dr. Chandrashekhar Kaduba Patil(Ph.D)
Department of Polymer Chemistry,
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Academic Qualifications

- **Ph.D.** (**Polymer Chemistry) May 2013 to July 2018** on the topic entitled, "**Use of Agricultural Feed Stocks for Synthesis of Polymeric Resins for Preparation of Composite Coating with Antimicrobial Properties.**" Department of Polymer Chemistry, School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon-425 001 (M.S.), India
- **M. Sc**. **Chemistry June 2010 to May 2012** (with Specialization Pesticides and Agrochemicals) (**First Class with distinction- A grade**) from Department of Pesticides and Agrochemicals, School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon-425 001 (M.S.), India
- **B. Sc**. in **Chemistry (First class)** from S.S.M.M College, Pachora Affiliated to Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon-425 001 (M.S.), India

Area of Research

- Synthesis of polyols using agricultural or renewable sources (polyesteramide, alkyd, epoxy, polyetheramide, etc.)
- Design and development of multi-functional polyol from vegetable oil.
- Preparation of polyurethanes and its applications in decorative, antimicrobial, anticorrosive, and protective coatings
- Preparation of waterborne polyurethane coatings
- Preparation of bio-based foam from natural oils
- Preparation of bio-epoxy resins and composites or blends derived from renewable resources
- Design and development of nanocomposite coatings for smart applications

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Familiar About

- Polyurethane, polyols, and types of isocyanates.
- Development of polyurethane coatings, rigid and flexible foams, composites, and films.
- Nano-composite coatings
- Types of coatings such as self-healing, self-cleaning, anticorrosive, antimicrobial, super hydrophobic, etc.

Research Experience

A. Research Experience (May 2013 to 2018, Ph.D. scholar, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India)

Department of Polymer Chemistry, School of Chemical Sciences, North Maharashtra University, Jalgaon-425 001 (M.S.), India

Ph.D. Thesis Title: "Use of Agricultural Feed Stocks for Synthesis of Polymeric Resins for Preparation of Composite Coating with Antimicrobial Properties."

- Synthesis and characterization of vegetable oil based polyols such as polyesteramide, alkyd, and polyetheramide
- Preparation of polyurethane (PU) coatings
- Characterizations of PU coatings such as coating properties, corrosion resistance by PDP, antimicrobial performance, and thermal stability by TGA and DSC

B. Research Experience (April 2013 to October 2015, UGC Major Project, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India)

Department of Polymer Chemistry, School of Chemical Sciences, North Maharashtra University, Jalgaon-425 001 (M.S.), India

Project Title: "Design and development of eco-friendly 1K polyurethane nano-composite coating system for high performance application"

- Synthesis and characterization of blocked isocyanate.
- Preparation of polyols from vegetable oil
- Preparation of PU coatings from blocked isocyanate and bio-based polyols

C. Research Experience (June 2011 to May 2012, Project, Postgraduate student, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India)

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Department of Pesticides and Agrochemicals, School of Chemical Sciences, North Maharashtra University, Jalgaon - 425 001 (M.S.) India

Project Title: "Utilization of Fly ash as a Carrier in Preparation of Pendimethalin 5% Granular Herbicide Formulation"

- Preparation of herbicide granular formulation from fly ash, pendimethalin as active ingredient, and natural gum as binder, which is collected from plant.
- Preparation of pendimethalin based granular herbicide

Teaching Experience

➢ Teaching to the M. Sc. Polymer Chemistry and Pesticides & Agrochemicals, students of the university

➢ Project training to the M. Sc. Polymer Chemistry students of the university

Technical Expertise

- ➢ Separation, purification, and spectral analysis (FT-IR and NMR)
- ➢ End group analysis *viz.* acid, hydroxyl, iodine, and saponification values
- ➢ Molecular weight determination of polymers by using chromatographic method like GPC or SEC
- ➢ Thermal behavior and morphological study of prepared polymer by TGA, DSC, SEM, and TEM
- ➢ Anticorrosive and antimicrobial studies of prepared coatings
- ➢ Expertise in preparation of coatings and checking their properties like contact angle, gloss, crosscut adhesion, flexibility, pencil hardness, etc. by different instruments

Instrumentation and Software skills:

Instrumental Analysis

- ❖ Differential Scanning Calorimeter
- ❖ FT-IR and UV spectrometer
- ❖ Thermo Gravimetric Analyser

Software skills

- ❖ MS Office
- ❖ Chemsketch, Chemdraw
- ❖ Origin
- ❖ Excel

Research Publications

International Publications

1 **Chandrashekhar. K. Patil,** Sandip. D. Rajput, Ravindra J. Marathe, Ravindra D. Kulkarni, Hemant Phadnis, Daewon Sohn,* Pramod P.

Mahulikar, Vikas V. Gite*, Synthesis of Bio-based Polyurethane Coatings from Vegetable Oil and Dicarboxylic Acids. **Progress in Organic Coatings *(Elsevier)*** 2017, 106, 87-95 **[IF. 2.955]**

2 **Chandrashekhar K. Patil,** Harishchandra D. Jirimali, Jayasinh S. Paradeshi, Bhushan L. Chaudhari, Vikas V. Gite, Development and Characterization of Vegetable Oil Modified Antimicrobial and Anticorrosive Nanocomposite Coatings Using Silver Doped Egg Shell Hydroxyapatite, **Progress in Organic Coatings, *(Elsevier)* [IF. 2.955] (Accepted).**

3 **Chandrashekhar K. Patil,** Harishchandra D. Jirimali, Jayasinh S. Paradeshi, Bhushan L. Chaudhari, Prakash K. Alagi, Sung Chul Hong, Vikas V. Gite, Synthesis of Multifunctional Alkyd and Polyesteramide Polyols from Natural Oil and Their Application in Antibacterial and Anticorrosive Coatings, ***Green Materials*** **[IF. 1.344] (Accepted).**

4 Abhijeet Anand, Ravindra D. Kulkarni, **Chandrashekhar K. Patil,** Vikas V. Gite* Utilization of renewable bio-based resources, viz. sorbitol, diol, and diacid, in the preparation of two pack PU anticorrosive coatings. **RSC Advances *(RSC)*** 2016, 6, 9843 **[IF. 2.936]**

5 Prakash Alagi, Ravindra Ghorpade, Jeong Hyeon Jang, **Chandrashekhar Patil,** Harishchandra Jirimali, Vikas Gite, Sung Chul Hong, "Functional soybean oil-based polyols as sustainable feedstocks for polyurethane coatings, ***Industrial Crops and Products (Elsevier)*** 2018, 113, 249–258 **[IF. 3.849]**

6 Sandip. D. Rajput, **Chandrashekhar. K. Patil,** Vikas V. Gite*, Fabrication of Renewable Myristic Acid Based Polyurethane Nano Zinc Phosphate Hybrid Coatings to Mitigate Corrosion of Mild Steel. **Pigment and Resin Technology,** 47 (2), 97-107 **[IF. 0.486]**

7 Prakash Alagi, Ravindra Ghorpade, Jeong Hyeon Jang, **Chandrashekhar Patil,** Harishchandra Jirimali, Vikas Gite, Sung Chul Hong, Effect of Hydroxyl Functionality of Soybean Oil-based Polyols on the Properties of Polyurethane Coatings, ***Macromolecular Research (Springer)*** 26(8), 696-703 (2018) **[IF. 1.767]**

8 **Chandrashekhar K. Patil,** Harishchandra D. Jirimali, Jayasinh S. Paradeshi, Bhushan L. Chaudhari, Prakash K. Alagi, Sung Chul Hong, Vikas V. Gite, Vegetable Oil and Isosorbide as Renewable Raw Materials to Synthesize Polyetheramide Polyols for Preparation of Functional Anticorrosive and Antimicrobial Polyurethane Coatings, ***Industrial Engineering and Chemistry Research (ACS)*** **[IF. 3.141] (Communicated).**

9 **Chandrashekhar K. Patil,** Harishchandra D. Jirimali, Jayasinh S. Paradeshi, Bhushan L. Chaudhari, Vikas V. Gite, Functional Antimicrobial and Anticorrosive Polyurethane Coatings from Vegetable Oil: As a Sustainable Development, ***Applied Surface Sciences*** ***(Elsevier)*** **[IF. 4.439] (Communicated).**

10 Jitendra C. Khanderay, **Chandrashekhar K. Patil,** Vikas V. Gite, Synthesis and Characterization of Dimer Acid and Isosorbide Polyester Polyols for Preparation of Polyurethane Coating. **(Ready to Submission).**

11 Vegetable Oil based Polyurethane Coatings- Review (**Under writing**)

Conferences/Symposia/Workshop attended /Participated

A. International

1. **Chandrashekhar K. Patil,** S. D Rajput P. P. Mahulikar, V. V. Gite, Renewable Source Based Two Pack Polyurethane Wood Finished Coatings from Dimer Fatty Acid, International conference on *Innovations in Energy, Polymer and Environmental Sciences (IEPES - 2014)* organised by Rayat Shikhan Shantha, Satara, Y. C. Institute of Sciences and Shivaji University Kolhapur, during 10-12 Jan., 2014 at Satara, Maharashtra, India
2. **Chandrashekhar Patil** , Mandar S. Gaikwad, O. S. Yemul , D. G. Hundiwale , V. V. Gite "Bio-based Waterborne Polyurethane Coatings from Cotton Seed Oil" *International Conference on Global Opportunities for latest Developments In Chemistry and Technology (GOLD-CT-2014),* during 06-08 February., 2014, organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
3. **Chandrashekhar K. Patil,** Vikas V. Gite, P. P. Mahulikar, Daewon Sohn. Vegetable oil is Renewable Resources for Preparation of Polyurethane Coatings using Biobased Dicarboxylic Acids, *3rd Global Sustainable Biotech Congress-2014, An International Conference on Innovations in Biotechnology and their Applications* on 1st - 5th December 2014 at Kavayitri Bahinabai Chaudhari North Maharashtra University,, Jalgaon, India
4. **Chandrashekhar K. Patil,** Vikas V. Gite P. P. Mahulikar, Daewon Sohn. Preparation of Polyurethanes from Dicarboxylic Acids of Vegetable Origin and Cotton Seed Oil as a Sustainable Approach for Coatings Applications. *International Conference on Chemical Materials and Bio-Science for Sustainable Development (ICCMBSD-*

2015) on 8th - 10th January 2015 at Walchand College of Arts and Science, Solapur in Collaboration with Monad Nanotech Pvt. Ltd., Mumbai, India

5. **Chandrashekhar K. Patil,** Pramod P. Mahulikar and V. V. Gite. Polyurethanes Coating from Bio based Dicarboxylic Acids and Cotton Seed Oil: Applications, Preparation and Characterization, *Conference on Advancements in Polymer Sciences and Technology (APA-2015),* on 29th-31st October, 2015, at Saurashtra University, Rajkot, India
6. **Chandrashekhar K. Patil**, V. V. Gite. Renewable Polyurethane Coatings from Vegetable Oil: Synthesis, Structural Characterization, Evaluation of Polyol and Coating Properties, RSC Symposium on Frontiers if Advances in Chemistry and Technology-2015 (FACT-2015), on 11th & 12th December 2015, Organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon , India

B. National

1. **Chandrashekhar K. Patil**, "Chemistry-our Life our Future, *International Year of Chemistry-2011,* during 26 Dec., 2011, organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
2. **Chandrashekhar K. Patil**, Participated, First *National Conference on Innovation in Chemistry-Laboratory to Society (ICLS-2013)* during 11th March, 2013, organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
3. **Chandrashekhar K. Patil,** Sandip D. Rajput, Amardip M. Patil, Vikas V. Gite, Synthesis and Characterization of Gossypium Arboreum Plant and Biobased Dicarboxylic Acids based High Gloss Polyurethane Coatings, *National Symposium on Polymers & Coatings (NSPC-2014)* during 26-27 April, 2014, organized by CSIR-Indian Institute of Chemical Technology, IICT Hyderabad-500 007 India
4. **Chandrashekhar K. Patil,** Jitendra C. Khanderay and V. V. Gite. Agricultural Sources as Potential Feedstock for Preparation of Smart Polymer: Applications for Society, University level Research Convention "AVISHKAR- 2015**"** on 22nd-23rd December 2015, organized by Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
5. **Chandrashekhar K. Patil,** Agricultural Sources as Potential Feedstock for Preparation of Smart Polymer: Applications for Society, *University level Research Convention "AVISHKAR- 2015"* on

10th-12th January 2016, organized by Savitribai Phule Pune University, Pune, India

6. **Chandrashekhar K. Patil** and V. V. Gite. Agricultural Sources as Potential Feedstock for Preparation of Smart Polymer: Applications for Society, *Celebration of National Sciences Day-2016 (NSD-2016),* on 11th March 2016, On the Theme "Make in India: Science and Technology" Organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon at NMU, Jalgaon, India
7. **Chandrashekhar K. Patil** and V. V. Gite. Synthesis of Polymeric Resins from Agricultural Resource (Cotton Seed Oil): Application in Polyurethane Coatings, *in 1st National Conference on Advance in Chemical Sciences (ACS-2017),* on 4th March, 2017, Organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
8. **Chandrashekhar K. Patil** and V. V. Gite Cotton Seed Oil as a Renewable Agricultural Feedstock for Synthesis of Polyesteramide Polyols: Application in Polyurethane Coatings *in Sixth Conference on "Recent Advances in Polymer Technology" (RAFT-2017)* ON 27th – 28th January 2017, Organized by University Institute of Chemical Technology, Kavayitri Bahinabai Chaudhari North Maharashtra University Jalgaon, India

Awards and Achievements

- **Awarded 1st Prize for Best oral** presentation in *International Conference on Chemical Materials and Bio-Science for Sustainable Development (ICCMBSD-2015)* on 8th - 10th January 2015 at Walchand College of Arts and Science, Solapur in Collaboration with Monad Nanotech Pvt. Ltd., Mumbai**,** India
- **Awarded 1st Prize in Best Poster** presentation in *RSC Symposium on Frontiers if Advances in Chemistry and Technology-2015 (FACT-2015),* on 11th & 12th December 2015, Organized by School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, Jalgaon, India
- **Awarded 1st Prize in Best Oral** presentation in *University level Research Convention "AVISHKAR- 2015"* on 22nd-23rd December 2015, Organized by Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India
- **Awarded 2st Prize in Best Poster** presentation in *Celebration of National Sciences Day-2016 (NSD-2016),* on 11th March 2016, On the Theme "Make in India: Science and Technology" Organized by

School of Chemical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India

- **Awarded 1st Prize for Best Oral** presentation in Sixth Conference on *"Recent Advances in Polymer Technology" (RAFT-2017)* on 27th – 28th January 2017, Organized by University Institute of Chemical Technology, Kavayitri Bahinabai Chaudhari North Maharashtra University Jalgaon, India
- **Awarded 2nd Prize for Best Poster** presentation in National Conference on *"Changing Paradigms in Chemical Sciences (CPCS-2017)"* on 22 – 23rd December, 2017, Organized by Bhusawal Arts, Science & P.O Nahata Commerce College, Bhusawal, Jalgaon, India
- University Grant commission, New Delhi (India) **awarded Junior Research Fellowship (UGC-BSR-JRF)** in Sciences for meritorious student under RFSMS fellowship (2015-2017)

Life Membership of Professional Organizations

1. Life Member of The Society for Polymer Science (SPS), NCL, Pune, India
2. Life Member of Asian Polymer Association (APA), New Delhi, India

Personal Details

Date of Birth	: 27th June1989
Gender	: Male
Permanent Address	: At- Rajuri, Post- Wadi-Shewale, Tal-Pachora, Dist- Jalgaon, (M.S) India-424203
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Languages Known	: English, Hindi and Marathi
Marital Status	: Married
Nationality	: Indian

Curriculum-Vitae

References

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