

CURRICULUM VITAE

Prakash Kallappa Alagi (Ph.D.)

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Summary

- A research and development professional with 10+ years' experience in the polymer synthesis, resins, small molecules and their applications in elastomers and coatings.
- Solid knowledge and experience in Ring opening polymerization, Radical, RAFT, ATRP, Anionic and Polycondensation polymerization techniques and strong hands on using high pressure reactors.
- Strong understanding of circular economies, materials and recyclability.
- Peer-reviewed papers in high impact journal related to Polycarbonate, Polyurethane, and Polyether etc.
- Organizing and hosting meetings, actively adhering project milestones, and achieving project deliverables for R&D projects.
- Experience on scale up (polymer synthesis) from lab scale to pilot plant scale (gram scale to 10 Kg scale)

Research experience:

A. Research Experience (Dec 2017 to current, Postdoc, KAUST, Saudi Arabia)

Physical Science and Engineering Division (PSE), King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

- Polyol synthesis (polyether and polycarbonate diols and triols) using boron based chemistry on scale up level by anionic polymerization
- Macromolecular architectures: Polycarbonates from CO₂ and epoxide with various architecture by anionic polymerization
- End group removal (thiocarbonyl thio group) for RAFT synthesized polymers
- Polyglycidol with controlled architecture by anionic polymerization
- Characterization techniques: Analytical: Gel Permeation Chromatography (GPC), Nuclear Magnetic Resonance (NMR) and MALDI-TOF techniques, Fourier-transform infrared spectroscopy (FTIR). Morphological: Atomic Force Microscopy (AFM). Thermal: Thermogravimetric Analysis (TGA), Differential Scanning Calorimetry (DSC). Mechanical: UTM mechanical testing.

B. Research Experience (March 2013 to Sept 2017, Ph.D. scholar, Sejong university Korea)

Polymeric nanomaterial laboratory, Nanotechnology and Advanced Materials Engineering, Sejong University, Seoul, South Korea.

Ph.D. Thesis Title: "Sustainable Polyurethanes from Soybean Oil and Carbon Dioxide-Based Polyols: Synthesis, Characterization, and Applications"

- Synthesis and characterization of TPUs and TPU coatings from CO₂-based polyols
- Synthesis and characterization of TPUs and PU coatings from VO-based polyols
- Development of controlled architecture and multi-functional polyol from VOs

C. Research Experience (Feb 2011 to Feb 2013, Research associate at Syngene international Ltd., Bangalore, India)

- Synthesis of biopolymers under cGMP conditions at lab to pilot scale
- Synthesized Block-copolymer by Radical & RAFT polymerization techniques
- Skilled in handling of gaseous reaction in autoclave

D. Research Experience (Aug 2009 to July 2010, R&D Chemist at JBF RAK LLC, UAE)

- Design and development of coating materials for polyester film
- Responsible for the analysis of PET resin (polyester chips) and PET films.

E. Research Experience (Aug 2008 to July 2009, Chemist at Gharda Chemical Ltd. Chiplun, India)

- Responsible for chemical analysis of raw materials and finished products

Educational background:

Postdoc: December 2017 to current, KAUST, Saudi Arabia.

Ph.D. (Polymer chemistry): March 2013 to October 2017, Sejong University, South Korea (Grade-A)

M.Sc. (Polymer chemistry): June 2006 to June 2008, Solapur University, India (Second class)

B.Sc. (Chemistry): June 2001 to June 2004, Shivaji University, India (First class)

Research Output:

▪ **Patent :**

1. Xiaoshuang Feng, **Alagi Prakash**, Gnanou Yves, Hadjichristidis Nikos “Removal of thiocarbonylthio end groups from polymers synthesized by reversible addition-fragmentation chain transfer polymerization” [US 2018-62767112](#), [US 2019-62800653](#), [WO 2020100086](#), [EP 3880718](#).

▪ **Publications:**

1. **Prakash Alagi**, Nikos Hadjichristidis, Yves Gnanou*, Xiaoshuang Feng*, “Quasilinear Polyglycidols by Triethylborane-Controlled Anionic Polymerization of Unprotected Glycidol”, [Manuscript submitted](#).

2. **Prakash Alagi**, George Zapsaa, Nikos Hadjichristidis, Sung Chul Hong, Yves Gnanou*, Xiaoshuang Feng*, “All-Polycarbonate Graft Copolymers with Tunable Morphologies by Metal-Free Copolymerization of CO₂ with Epoxide”, [Macromolecules](#), *54*, 6144-6152 (2021).

3. **Prakash Alagi**, Nikos Hadjichristidis, Yves Gnanou*, Xiaoshuang Feng*, “Fast and Complete Neutralization of Thiocarbonylthio Compounds Using Trialkylborane and Oxygen: Application to Their Removal from RAFT-Synthesized Polymers”, [ACS Macro Letters](#) *8*, 664-669 (2019).

4. Naganath G Patil, Senthil K Boopathi, **Prakash Alagi**, Nikos Hadjichristidis, Yves Gnanou*, Xiaoshuang Feng*, “Carboxylate Salts as Ideal Initiators for the Metal-Free Copolymerization of CO₂ with Epoxides: Synthesis of Well-Defined Polycarbonates Diols and Polyols”, [Macromolecules](#) *52* (6), 2431-2438 (2019).

5. **Prakash Alagi**, Ravindra Ghorpade, Jeong Hyeon Jang, Chandrashekharpatil, HarishchandraJirimali, VikasGite, Sung Chul Hong*, “Controlled hydroxyl functionality of soybean oil-based polyols for polyurethane coatings with improved anticorrosion properties”, [Macromolecular Research](#) *26* (8), 696-703 (2018).

6. Ye Jin Choi, **Prakash Alagi**, JeongHyeon Jang, Shin Jong Lee, Ha young Yoon, Sung Chul Hong*, “Compositional elements of thermoplastic polyurethanes for reducing the generation of acetaldehyde during thermo-oxidative degradation”, [Polymer Testing](#), *68*, 279-286 (2018).

7. **Prakash Alagi**, RavindraGhorpade, JeongHyeon Jang, Chandrashekharpatil, Il Kim*,

HarishchandraJirimali, VikasGite, Sung Chul Hong*, “Functional soybean oil-based polyols as sustainable feedstocks for polyurethane coatings”, [Industrial crops and products 113](#), 249-258 (2018).

8. **Prakash Alagi**, RavindraGhorpade, Ye Jin Choi, UmakantPatil, Il Kim*, Joon Hyun Baik*, Sung Chul Hong*, “Carbon Dioxide-Based Polyols as Sustainable Feedstock of Thermoplastic Polyurethane for Corrosion-Resistant Metal Coating”, [ACS Sustainable Chemistry and Engineering 5\(5\)](#), 3871–3881 (2017).

9. **Prakash Alagi**, Ye Jin Choi, JoonilSeog, Sung Chul Hong*, “Efficient and quantitative chemical transformation of vegetable oils to polyols through a thiol-ene reaction for thermoplastic polyurethanes”, [Industrial Crops and Products 87](#), 78-88 (2016).

10. **Prakash Alagi**, Ye Jin Choi, Sung Chul Hong*, “Preparation of Vegetable Oil-based Polyols with controlled Hydroxyl Functionalities for Thermoplastic Polyurethane”, [European Polymer Journal](#), 78, 46-60 (2016).

11. **Prakash Alagi**, Sung Chul Hong*, “Vegetable oil-based polyols for sustainable polyurethanes”, [Macromolecular Research](#), 23 (12), 1079-1086 (2015).

Research Awards at Conferences: (3 Awards for Best Poster and Oral Presentation)

1. **Prakash Alagi**, Ye jin Choi, Sung Chul Hong, “Controlled Preparation of Vegetable Oil-based Polyols with Primary Hydroxyl Functionalities for Thermoplastic Polyurethanes”- [14th Pacific Polymer Conference 2015-12, USA](#)
2. **Prakash Alagi**, Ye Jin Choi, Jeong Hyeon Jang, Sung Chul Hong, “Soybean Oil-based Polyol with Predetermined Number of Primary Hydroxyl Functionalities for Thermoplastic Polyurethane” – [Outstanding Poster Award](#), IUPAC-PSK40 2016-10, Korea.
3. **Prakash Alagi**, Ye Jin Choi, Ravindra Ghorpade, Sung Chul Hong, “Characteristics of Polycarbonate Polyol from Carbon Dioxide for Thermoplastic Polyurethane” – [Excellent Paper Presentation Award](#), KSIEC 2016-10, Korea.
4. **Prakash Alagi**, Ye Jin Choi, Ravindra Ghorpade, Sung Chul Hong, “Characteristics of Thermoplastic Polyurethanes with Improved Corrosion Resistance from CO₂ based polyols” – [Excellent Oral Paper Presentation Award](#), KSIEC 2017-05, Korea.
5. **Prakash Alagi**, ”Well-Defined Poly(methacrylate-g-carbonate) Brushes By Combination of RAFT and Anionic Copolymerization of CO₂ with Propylene Oxide” [16th Pacific Polymer Conference 2019-12, Singapore](#)

Digital Identifier Link:

Google Scholar:<https://scholar.google.com/citations?user=QJhRcoAAAAAJ&hl=en>

Research gate:https://www.researchgate.net/profile/Prakash_Alagi2

Personal Details:

- ❖ Date of birth : 8th May 1984
- ❖ Gender : Male
- ❖ Language Known : English, Marathi, Hindi
- ❖ Permanent Address: At/Post- Udagi, Tal. Akkalkot, Dist.- Solapur, Maharashtra, India Pincode-413216.

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