

Curriculum Vitae
Chandrakumar Appayee, Ph.D.

Associate Professor
Discipline of Chemistry
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Current position

Associate Professor (2020–Present)

Discipline of Chemistry
Indian Institute of Technology Gandhinagar
Gandhinagar, Gujarat, India

Previous positions

Assistant Professor (2013–2020)

Discipline of Chemistry
Indian Institute of Technology Gandhinagar
Gandhinagar, Gujarat, India

Postdoctoral Research Scientist (2012–2013)

Department of Chemistry
Columbia University
New York, USA
Adviser: Prof. Ronald Breslow

Postdoctoral Research Associate (2009–2012)

Department of Chemistry
Brooklyn College and the City University of New York
New York, USA
Adviser: Prof. Stacey E. Brenner-Moyer

Postdoctoral Research Associate (2008–2009)

Department of Chemistry
University of Miami
Coral Gables, Florida, USA
Adviser: Prof. Norito Takenaka

Education

Ph.D. Organic Chemistry, **Indian Institute of Science**, Bangalore, India (2003–2008)

Adviser: Prof. Kavirayani R. Prasad

M.Sc. Chemistry, **Alagappa University**, Karaikudi, Tamil Nadu, India (2000–2002)

B.Sc. Chemistry, **University of Madras**, Chennai, India (1994–1997)

Research interest

- Asymmetric organocatalysis
- Supramolecular catalysis
- Asymmetric synthesis of bio-active molecules
- Study of small molecules for targeted diseases

Patents

- Appayee, C.; Padmaja, V. M. D.; Kutwal, M. S. "Photochromic organic compounds and a process for preparation thereof". *Indian Patent, Application No. 202021012831*.
- Appayee, C.; Padmaja, V. M. D. "Photochromic organic compounds and a process for preparation thereof". *Indian Patent, Application No. 202021012829*.
- Appayee, C.; Sarkale, A. M. "Method for the asymmetric synthesis of (S)-paraconic acid". *Indian Pat. Appl. (2019), IN 201721019540 A 20190712*.

Publications

1. Sarkale, A. M.; **Appayee, C.*** "Stereodivergent Synthesis of 1-Hydroxymethylpyrrolizidine Alkaloids" *Org. Lett.* **2020**, 22, 4355-4359.
2. Kutwal, M. S.; Padmaja, V. M. D.; **Appayee, C.*** "Regio- and Enantioselective α,γ -Dialkylation of α,β -Unsaturated Aldehydes through Cascade Organocatalysis" *Eu. J. Org. Chem.* **2020**, 2720-2724. (Invited Article for a themed collection "[YourJOC Talent](#)")
3. Maurya, V.; **Appayee, C.*** "Enantioselective Total Synthesis of Potent 9 β -11-Hydroxyhexahydrocannabinol" *J. Org. Chem.* **2020**, 85, 1291-1297.
4. Sarkale, A. M.; Maurya, V.; Giri, S.; Appayee, C.* "Stereodivergent Synthesis of Chiral Paraconic Acids via Dynamic Kinetic Resolution of 3-Acylsuccinimides" *Org. Lett.* **2019**, 21, 4266-4270.

5. Kutwal, M. S.; Dev, S; **Appayee, C.*** “Catalytic Regioselective γ -Methylenation of α,β -Unsaturated Aldehydes Using Formaldehyde via Vinylogous Aldol Condensation” *Org. Lett.* **2019**, *21*, 2509-2513. (Among the most downloaded articles in April **2019** and also highlighted in *Synfacts* **2019**, *15*, 0797)
6. Padmaja, V. M. D.; Jangra, S.; **Appayee, C.*** “Highly Regioselective α -Alkylation of $\alpha,\beta,\gamma,\delta$ -Unsaturated Aldehydes” *Org. Biomol. Chem.* **2019**, *17*, 1714–1717. (Invited Article for a themed collection “New Talent”)
7. Maurya, V.; **Appayee, C.*** “Catalytic Asymmetric Synthesis of 3,4-Disubstituted Cyclohexadiene Carbaldehydes: Formal Total Synthesis of Cyclobakuchiols A and C” *Org. Lett.* **2018**, *20*, 4111-4115.
8. Sarkale, A. M.; Kumar, A.; **Appayee, C.*** “Organocatalytic Approach for Short Asymmetric Synthesis of (R)-Paraconyl Alcohol: Application to the Total Syntheses of IM-2, SCB2, and A-Factor γ -Butyrolactone Autoregulators” *J. Org. Chem.* **2018**, *83*, 4167-4172.
9. Kutwal, M. S.; **Appayee, C.*** “Highly Regio- and Enantioselective γ -Alkylation of Linear α,β -Unsaturated Aldehydes” *Eu. J. Org. Chem.* **2017**, 4230-4234. (featured in the virtual issue “Emerging Investigators from India”)

Previous Publications

10. **Appayee, C.**; Breslow, R.* Deuterium studies reveal a new mechanism for the formose reaction involving hydride shifts. *J. Am. Chem. Soc.* **2014**, *136*, 3720–3723.
11. Chen, W.; Li, H.; Widowsky, J. R.; **Appayee, C.**; Venkataraman, L.*; Breslow, R.* Aromaticity decreases single-molecule junction conductance. *J. Am. Chem. Soc.* **2014**, *136*, 918–920.
12. Jones, J. H.; **Appayee, C.**; Brenner-Moyer, S. E.* One-pot preparation of enantiopure fluorinated β -amino acid precursors. *Eur. J. Org. Chem.* **2014**, 5273–5280.
13. Breslow, R.*; Ramalingam, V.; **Appayee, C.** Catalysis of glyceraldehyde synthesis by primary or secondary amino acids under prebiotic conditions as a function of pH. *Origins Life Evol. Biospheres* **2013**, 1–7.
14. Breslow, R.*; **Appayee, C.** Transketolase reaction under credible prebiotic conditions. *Proc. Natl. Acad. Sci. USA* **2013**, *110*, 4184–4187.
15. **Appayee, C.**; Fraboni, A. J.; Brenner-Moyer, S. E.* γ -Amino alcohols via organocascade reactions involving dienamine catalysis. *J. Org. Chem.* **2012**, *77*, 8828–8834.
16. **Appayee, C.**; Brenner-Moyer, S. E.* Organocatalytic enantioselective olefin aminofluorination. *Org. Lett.* **2010**, *12*, 3356–3359.
Highlighted in *Synfacts*, **2010**, *9*, 1070.

17. Takenaka, N.*; Chen, J.; Captain, B.*; Sarangthem, R.; **Chandrakumar, A.** Helical chiral 2-aminopyridinium ions: A new class of hydrogen bond donor catalysts. *J. Am. Chem. Soc.* **2010**, *132*, 4536–4537.
Highlighted in *Synfacts*, **2010**, *6*, 0712.
18. Prasad, K. R.*; **Chandrakumar, A.**; Dikundwar, A. G.; and Guru Row, T. N. Polymorphism in a TADDOL analogue induced by the presence of a chiral impurity. *CrystEngComm* **2010**, *12*, 3452–3454.
19. Prasad, K. R.*; **Chandrakumar, A.** Stereoselective synthesis of cytotoxic anhydrophytosphingosine pachastrissamine [jaspine B]. *J. Org. Chem.* **2007**, *72*, 6312–6315.
20. Prasad, K. R.*; **Chandrakumar, A.** Stereoselective syntheses of γ -alkyl (aryl)- α,β -dihydroxy- γ -butyrolactones and naturally occurring lipid guggultetrol. *Tetrahedron*, **2007**, *63*, 1798–1805.
21. Prasad, K. R.*; **Chandrakumar, A.**; Anbarasan, P. Asymmetric synthesis of both enantiomers of α -methyl- α -methoxyphenylacetic acid from L-(+)-tartaric acid: Formal enantioselective synthesis of insect pheromone (–)-frontalin. *Tetrahedron: Asymmetry*, **2006**, *17*, 1979–1984.
22. Prasad, K. R.*; **Chandrakumar, A.** Nucleophilic addition reactions of 1,4-diketones derived from tartaric acid: Synthesis of TADDOL analogues. *Synthesis*, **2006**, 2159–2166.
23. Prasad, K. R.*; **Chandrakumar, A.** Asymmetric synthesis of α -methoxyarylacetic acid derivatives. *Tetrahedron: Asymmetry*, **2005**, *16*, 1897–1900.

Awards and fellowships

- Awarded **Senior Research Fellowship** and **Junior Research Fellowship** by **Council for Scientific and Industrial Research**, India (2003–2008)
- Qualified for **Junior Research Fellowship** and **Lectureship** by **University Grant Commission**, India (2002)
- Received **gold medal** in Chemistry from **Alagappa University**, Karaikudi, Tamil Nadu, India (2002)

Professional memberships

- Chemical Research Society of India
- American Chemical Society
- New York Academy of Sciences