

Abdus Samad Jaufurally

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Graduate Student

DOB: April, 3rd August 1987 (Republic of Mauritius)

Research Topics

Valorization of phenolic compounds from lignocellulosic biomass using green chemistry and white biotechnologies:

- Controlled enzymatic polymerization of small phenolic compounds (monomers and dimmers of hydroxyl cinnamic alcohols) using ionic liquids for application in polymer chemistry (e.g., additives)
- New mechanistic insights on the enzymatic oligomerization of hydroxyl cinnamic alcohols (synthons for green chemistry)
- Development of purification and analytical methods

Present & previous positions

Oct. 2013 - **Graduate student**, *Research assistant in polymer chemistry at Chaire Agro-Biotechnologies Industrielles (ABI)*, AgroParisTech, Reims, France.

PhD thesis *Oxidative enzymatic polymerization of phenolic compounds from lignocellulosic biomass in ionic liquids*

- Development of laccase-catalyzed polymerization reaction of phenolic compounds
- Optimization of controlled enzymatic polymerization using ionic liquids
- Purification and analytical methods for the characterization of phenolic oligomers by GPC (Gel Permeation Chromatography) and NMR (¹H, ¹³C)
- New mechanistic insights on the enzymatic oligomerization of hydroxyl cinnamic alcohols

Supervisors Prof. Florent ALLAIS and Doctor Paul-Henri Ducrot

Aug. 2013 - **Chemist engineer**, *AgroParisTech*, Reims, France.

Sept. 2013

Project: *Biosynthesis of lignin models DHP (DeHydroPolymers)*

- Scale up synthesis of DHP
- Bibliography

Supervisors Prof. Florent ALLAIS

Oct. 2011 - **Master internship (M.Sc.)**, *INRA - Versailles*, France.

Sept. 2012

Project: *Synthesis of hybrid materials polysaccharides/polystyrene for the formation of supported synthetic lignins and the study of polysaccharides/lignin interactions in plant cell wall*

- Synthesis of lignin monomers and purification by flash chromatography
- Characterization by NMR (^1H , ^{13}C), UV and IR
- Enzyme-catalyzed polymerization of these phenolic compounds and GPC analysis of the oligomers formed

Supervisors Prof. Florent ALLAIS

Sept. 2011 - **Master internship (M.Sc.)**, (*PPMD*) *ESPCI*, Paris, France.
Oct. 2011

Project: *Fragrance-containing core shell microcapsules (Givaudan project)*

- Fragrance encapsulation by successive adsorption of polymers by a Layer-By-Layer process
- Laser granulometry analysis of the polymer capsules
- Optical and electron microscope analysis
- Study on the effect of pH on the stability of the fragrance capsules

Supervisors Prof. Patrick PERRIN

April 2011 - **Master internship (M.Sc.)**, *INRA - Versailles*, France.
July 2011

Project: *Study on the influence of laccases on the biosynthesis of lignins*

- Synthesis, purification and characterisation of phenolic monomers and dimers
- Laccase-catalyzed polymerization of phenolic compounds by “bulk” and “endwise” polymerisation
- Characterization of the oligomers by GPC, NMR (^1H , ^{13}C) and thioacidolysis

Supervisors Doctor Betty COTTYN

June 2010 - **Licence internship (B.Sc.)**, (*SOSCO*), U.de Cergy Pontoise, France.
July 2010

Project: *Methodology for the synthesis of α -trifluoromethylated aspartic acid in enantiopure form*

- Multi-step pure organic synthesis
- Purification of each step by liquid chromatography
- Characterization by NMR (^1H , ^{13}C , ^{19}F) and gas phase chromatography

Supervisors Doctor Julien PYTKOWICZ

Education

2013 - Present **phD student** (*in Polymer Chemistry*), ABIES Doctoral School - AgroParisTech, Paris, France.

2010-2012 **M.Sc.in Chemistry (with Honors)**, U. Pierre et Marie Curie , Paris, France.

2007-2010 **B.Sc.in Chemistry (with Honors)**, U. de Cergy Pontoise , Cergy, France.

Scientific production

Summary:

- 1 publications in preparation
- 1 oral communication
- 4 posters

Publications in preparation

1. Jaufurally, A.S.; Allais, F.; Ducrot, P.-H., *New mechanistic insights on the enzymatic oligomerization of hydroxyl cinnamic alcohols through optimization of the laccase mediated synthesis of syringaresinol.*

Oral Communications

- 2015 **Synthesis and polymerizations of new biobased macrobisphenols derived from ferulic acid**, *3rd Biopolymers International Conference*, (Nantes).
A. F. Reano, F. Pion, M. Z. Oulame, I. Barbara, A. L. Flourat, S. Domenek, P.-H. Ducrot, F. Allais

Posters

- 2014 **Lignin biosynthesis**, *Journées GDRs LIPs et Biomatpro*, April, MINES ParisTech Sophia-Antipolis (France).
Jaufurally, A.S.; Allais, F.; Ducrot, P.-H.
- 2014 **Enzymatic polymerization of phenolic compounds in ionic liquids**, *Journées des doctorants*, February, GMPA-INRA Grignon (France).
Jaufurally, A.S.; Allais, F.; Ducrot, P.-H.
- 2015 **Synthesis of syringaresinol via an optimized enzymatic oxidation of sinapyl alcohol**, *3rd International Symposium on Green Chemistry*, Avril, ISGC (La Rochelle).
Jaufurally, A.S.; Allais, F.; Ducrot, P.-H.
- 2015 **Synthesis and polymerizations of new biobased macrobisphenols derived from ferulic acid**, *3rd Biopolymers International Conference*, (Nantes).
A. F. Reano, F. Pion, M. Z. Oulame, I. Barbara, A. L. Flourat, S. Domenek, P.-H. Ducrot, F. Allais

Seminars

- 2013 **Liquides ioniques et polymères : Synthèse et modification chimique**, *Journée Scientifique du Groupement de Recherche Liquides Ioniques et Polymères - GDR LIPS*, October, INSA de Lyon, Villeurbanne (France) .