
PERSONAL INFORMATION

Applicant ID: [REDACTED]

Prefix:

[REDACTED]

Mailing Address

[REDACTED]

Permanent Address

Same as mailing address: Y

Date of Birth

Date of Birth: [REDACTED]

State: MS

Country: United States

Citizenship: US Citizen

If permanent resident, date status was granted:

High School Location

[REDACTED]

[REDACTED]

[REDACTED]

EDUCATION AND WORK EXPERIENCE

List academic institutions attended and your enrollment details.

Academic Institution	Location	Start Date	End Date	Degree Granting Program	Degree	Degree Cmpl.	Grad. Date	Field of Study	Cum. GPA	GPA Basis
University of Southern Mississippi	HATTIESBURG, MS, United States	05/2018	05/2022	Yes	BS	No, still enrolled in program		Materials Research - Polymers	3.7	4.0

List your teaching and work experiences relevant to your field of study since you began undergraduate studies. Experiences do not have to be limited to the academic realm.

Title	Institution/Organization	Start Date	Other Experience Ongoing	End Date
Undergraduate Researcher	The University of Southern Mississippi	01/2019	Yes	
Research and Development Intern	Heritage Plastics, Inc.	05/2020	No	08/2020
Research Intern	The University of Massachusetts Amherst	05/2021	No	08/2021
Research Mentor	The University of Southern Mississippi	01/2021	Yes	

List any significant academic honors, fellowships, scholarships, publications and presentations.

- Yan, X.; Xiong, M.; Li, J.T.; Zhang, S.; Ahmad, Z.; Lu, Y.; Wang, Z.Y.; Yao, Z.F.; Wang, J.Y.; Gu, X.; Lei, T. Pyrazine-Flanked Diketopyrrolopyrrole (DPP): A New Polymer Building Block for High-Performance n-Type Organic Thermoelectrics. *J. Am. Chem. Soc.* 2019, 141, 51, 20215-20221.
- Li, Q.Y.; Yao, Z.F.; Lu, Y.; Zhang, S.; Ahmad, Z.; Wang, J.Y.; Gu, X.; Pei, J. Achieving High Alignment of Conjugated Polymers by Controlled Dip-Coating. *Adv. Elec. Mater.* 2020, 6, 6, 2000080.
- Li, B.; Zhang, Q.; Zhang, S.; Ahmad, Z.; Chidanguro, T.; Davis, A.H.; Simon, Y.C.; Gu, X.; Zheng, W.; Pradhan, N.; Dai, Q. Spontaneously Supersaturated Nucleation Strategy for High Reproducible and Efficient Perovskite Solar Cells. *Chem. Eng. J.* 2021, 405, 126998.
- Zhang, S.; Alesadi, A.; Mason, G.T.; Chen, K.L.; Freychet, G.; Galuska, L.; Cheng, Y.H.; St. Onge, P.B.J.; Ocheje, M.U.; Ma, G.; Qian, Z.; Dhakal, S.; Ahmad, Z.; Wang, C.; Chiu, Y.; Rondeau-Gagne, S.; Xia, W.; Gu, X. Molecular Origin of Strain-Induced Chain Alignment in PDPP-Based Semiconducting Polymeric Thin Films. *Adv. Funct. Mater.* 2021, 31, 21, 2100161.
- Zhang, Q.; Conkle, K.; Ahmad, Z.; Ray, P.; Kolodziejczyk, W.; Hill, G.; Gu, X.; Dai, Q. (FA0.83MA0.17)0.95Cs0.05Pb(I0.83Br0.17)3 Perovskite Films Prepared by Solvent Volatilization for High-Efficiency Solar Cells. *Solar RRL.* 2021, DOI: 10.1002/solr.202100640
- Galuska, L.; Ocheje, M.; Ahmad, Z.; Rondeau-Gagn, S.; Gu, X. Elucidating the Role of Hydrogen Bonds for Improved Mechanical Performance in High-Performance Semiconducting Polymer. *Chem. Mater.* (Submitted 10/2021)
- "Compatible Conjugated Polymers: Impact on the Morphology and Mechanics of Flexible Electronics." Ahmad, Z. 48th Annual Waterborne Symposium, February 2021. Poster.
- "Compatible Conjugated Polymers: Impact on the Morphology and Mechanics of Flexible Electronics." Ahmad, Z. Mississippi Honors Conference, March 2021. Poster. 1st Place in STEM Division.

- "Compatible Conjugated Polymers: Impact on the Morphology and Mechanics of Flexible Electronics." Ahmad, Z. The University of Southern Mississippi Undergraduate Symposium, March 2021. Poster. 1st Place in Materials Synthesis Modification and Analysis.
- "Effect of Backbone Rigidity on Ductility for Optoelectronic Applications." Ahmad, Z. NSF EPSCoR: CEMOS Site Visit. August 2021. Oral Presentation.
- Barry M. Goldwater Scholarship (2021)
- Ronald E. McNair Scholars Program (2021-Present)
- Sigma Xi Research Honors Society Member (2021-Present)
- Olliphant Honors Scholarship (2021)
- Mississippi Manufacturers Association Scholarship (2021)
- USM Honors Program (2020-Present)
- Kristen Bower Scholarship (2020)
- Coatings Industry Education Foundation (CIEF) Leadership Scholarship (2020)
- School of Polymer Science and Engineering Student of the Month (January 2020)

Undergraduate Institution: University of Southern Mississippi

Current Institution: University of Southern Mississippi

Are you or have you been in a joint bachelor's-master's degree program? No

PROPOSED FIELD OF STUDY

Major Field of Study: Engineering - Chemical Engineering

Is your proposed graduate study interdisciplinary? Yes

Major Field of Study: Engineering - Chemical Engineering

Field of Study 2: Materials Research - Polymers

Field of Study 3: Materials Research - Electronic Materials

Field of Study 4: Chemistry - Macromolecular, Supramolecular, and Nanochemistry

PROPOSED GRADUATE STUDY

Proposed Academic Institution: Stanford University

Proposed Graduate Program: Chemical Engineering

City: Stanford

State: CA

Country: United States

REFERENCES

List names and organizational affiliations of individuals submitting Letters of Reference (two reference letters must be received at NSF by the published deadline, October 29, 2021 (Friday) 5:00 p.m. Eastern Time, for the application to be reviewed). You are strongly encouraged to provide three reference letters.

Last Name	First Name	MI	Organization	E-mail Address	Ref. Rank	Status
			The University of Southern Mississippi		1	Received
			The University of Southern Mississippi		2	Unsubmitted
			The University of Massachusetts, Amherst		3	Unsubmitted

PERSONAL, RELEVANT BACKGROUND AND FUTURE GOALS STATEMENT

- * Outline your educational and professional development plans and career goals. How do you envision graduate school preparing you for a career that allows you to contribute to expanding scientific understanding as well as broadly benefit society?
- * Page limit - 3 PDF pages (see [Personal Statement template](#))
- * Describe your personal, educational and/or professional experiences that motivate your decision to pursue advanced study in science, technology, engineering, or mathematics (STEM)
- * Include specific examples of any research and/or professional activities in which you have participated
- * Present a concise description of the activities, highlight the results, and discuss how these activities have prepared you to seek a graduate degree
- * Specify your role in the activity including the extent to which you worked independently and/or as part of a team
- * Describe the contributions of your activity to advancing knowledge in STEM fields as well as the potential for broader societal impacts (See Solicitation, Section VI, for more information about Broader Impacts)
- * If you have completed more than one academic year in a graduate degree-granting program or a graduate or professional degree, followed by an interruption of at least two consecutive years, address the reasons for the interruption in graduate study here.

Document Uploaded: Yes

GRADUATE RESEARCH PLAN STATEMENT

- * Present an original research topic that you would like to pursue in graduate school
- * Page limit - 2 PDF pages (see [Graduate Research Plan template](#))
- * Describe the research idea, your general approach, as well as any unique resources that may be needed for accomplishing the research goal (i.e., access to national facilities or collections, collaborations, overseas work, etc.)
- * You may choose to include important literature citations
- * Address the potential of the research to advance knowledge and understanding within science as well as the potential for broader impacts on society
- * The research discussed must be in a field listed in the Solicitation (Section X, Fields of Study).

Document Uploaded: Yes

Proposed Research Title

- * The title should be brief, informative, scientifically or technically valid, intelligible to a scientifically or technically literate reader, and suitable for use in the public press
- * Describe in succinct terms your proposed research, reflecting the contents of your Graduate Research Plan Statement
- * Include a list of key words, and do not use abbreviations and chemical formulas (in 255 characters or less)
- * This title will be used for searching research topics using the key words you supply
- * Do not use curly brackets, { }, in your Proposed Research Title or Key Words.

Proposed Research Title: Enhancing Electron Mobility and Mechanics in Optoelectronic Devices via Conjugated Blends.

Key Words: flexible electronics conjugated polymers mechanics

NSF GRFP PROGRAM INFORMATION

Select the level that most appropriately describes your stage of study at the GRFP application deadline.

All enrollment in graduate or professional degree-granting programs must be included.

You have not previously enrolled in a graduate degree-granting program, but plan to be enrolled in an eligible graduate degree-granting program next fall. Includes:

- * **Undergraduate** in the final year of a bachelor's degree program
- * **Individual who previously earned a bachelor's degree.**

Advisor

If you are currently enrolled in graduate school (Levels 2 or 3), provide the name(s) of your current or potential graduate research advisor(s). If you do not have a current or potential graduate research advisor, provide the contact information of your graduate program director.

Entry of at least one advisor is required with a maximum of three.

First Name	MI	Last Name	E-mail Address
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NSF publishes the names, the undergraduate and current institutions, and the fields of study of Fellowship recipients and Honorable Mention List on NSF GRFP site.

Do you wish your name to be published on the Honorable Mention List, posted at <https://www.research.gov/grfp/>?
Yes