

The University of Alabama Department of Chemistry and Biochemistry

2020 Application

Research Experiences for Undergraduates (REU) in Chemistry

May 25 – July 31, 2020

(Applications due February 28, 2020)

1. Full name: Ms./Mr. _____ Date: _____

Preferred name: _____ E-mail address: _____

2. Address (present): _____

(permanent): _____

3. Phone number (permanent): _____ (cell): _____

4. Date of Birth: _____ 5. Citizenship: _____

6. College(s) and University(ies) attended, with dates:

7. Academic Status: Freshman _____ Sophomore _____ Junior _____ Senior _____

8. Expected graduation date: _____ Overall GPA: _____ Chem. GPA: _____

9. College courses and grades (indicate those presently taking):

Course	Grade	Course	Grade
General Chemistry I	_____	General Chemistry II	_____
Organic Chemistry I	_____	Organic Chemistry II	_____
Organic Laboratory I	_____	Organic Laboratory II	_____
Physical Chemistry I	_____	Physical Chemistry II	_____
Other Chemistry	_____	Other Chemistry	_____
Mathematics I	_____	Mathematics II	_____
Mathematics III	_____	Mathematics IV	_____
Physics I	_____	Physics II	_____
Biology I	_____	Biology II	_____

Other Science(s): _____ Language: _____

10. Earliest date you could begin research: _____

11. Do you plan to attend graduate school? Yes _____ No _____ Undecided _____

If yes, in: Chemistry _____ Biochemistry _____ Other: _____

Does medical school figure into your plans? Yes _____ No _____

12. Name, title, and address of two individuals you have asked to write letters of recommendation (include at least one person who can comment on your laboratory skills):

Name, Title	Address
Name, Title	Address

Send application and letters to: **Monika Agin** (mjagin@ua.edu)
Dept. of Chemistry and Biochemistry, Box 870336
The University of Alabama
Tuscaloosa, AL 35487-0336

13. Enclose with this application a one-page summary of your career goals. Indicate how you think participation in this program will assist you in attaining these goals.
14. Indicate your top four (or more) choices of research projects or areas below in order of preference:

_____ First Choice _____ Second Choice _____ Third Choice
_____ Fourth Choice _____ Other Choice

1. Combining Symmetry and Big Data to Study Atomic Structures
2. Mapping the Possible Structural Distortions in Rutile-type Crystals
3. Investigation of Structure Type Mixing in Intermetallic Solids
4. One-Pot Heterogeneous Catalysts for Green Chemistry
5. Porous Carbon-Based Catalysts for Fuel Cells
6. Synthesis of Novel Separation Geometries
7. Beyond Raney Nickel: Next Generation Hydrogenation Catalysts
8. Cocrystals - Building Electron Donor-Acceptor CoCrystal Networks and Determining their Structure
9. Synthesizing New Organic Molecules Capable of Reversible Photo-Electro Rearrangement
10. Using Focused Sound Waves to Activate Chemical Reactions at Defined Locations
11. Chemical Sensing of Biologically Relevant Carboxylates using Fingerprinting Techniques
12. Concentration, Solubilization, and Detection of Polycyclic Aromatic Hydrocarbons (PAHs)
13. Polymer-based Phosphate and Nitrate Sensors for Environmental Applications
14. Mass Spectrometry Ionization of Biomolecules
15. Mass Spectrometry Studies of Peptides
16. Carbon Dioxide Capture, Reactivity and Sequestration
17. Computational Approaches to Advanced Energy Systems - Actinide and Lanthanide Chemistry
18. Computational Biochemistry: Acid/Base Properties and Thermochemistry of Peptides
19. Computational Studies of Homogeneous and Heterogeneous Catalytic Reactions
20. Mechanisms regulating CRISPR-Cas10 mediated interference
21. Structure and Mechanism of Antibiotic Resistance rRNA Methyltransferases
22. Development of Catalytic Diversity in an Enzyme Scaffold
23. Investigation of Protein Dynamics using Mass Spectrometry
24. Nanoscale Chemistry of Solar Cells with AFM-IR Spectroscopy
25. Chemical Imaging of Cancer with Infrared Spectroscopy
26. Nanoparticle Synthesis for Solar Cell Applications
27. Synthesis of Inorganic Materials Using Biological Templates
28. Thin Film Synthesis of Novel Oxide Materials Using Pulsed Laser Deposition
29. Development of Novel Catalytic Reaction Methodology

30. New Reagents for Organic Synthesis
31. Total Synthesis of Natural Products
32. Electrochemical and Optical Sensors
33. Nanoelectrochemistry for Ultrasensitive Detection
34. Nanomaterials for Batteries
35. Organic Solar Cells
36. Catalysis for Storing Energy and Converting Carbon Dioxide to Solar Fuels
37. Designing Metal Based Drugs that Target Cancerous Cells
38. Dye-Sensitized Solar Cells: Designing Molecules to Move Electrons Around
39. Influence of protein-RNA interactions in regulating tRNA-modifying hydroxylase activity
40. Bioengineering of Tailored Oxidase/Oxygenase Metalloenzymes
41. Demystifying Metalloenzyme Function for Improved Understanding of Neurodegenerative Disease
42. Advanced Thermoplastics
43. Polymers for Drug Delivery
44. New Catalysts for Environmentally Benign Synthesis
45. Organometallic Catalysts in Organic Synthesis
46. Ligand Assisted C-H and C-O Bond Activation
47. Asymmetric Reaction Methodology
48. Medium Ring Carbocycles and Cytotoxic Xenia Diterpenoids
49. Novel Antiinflammatory and Anticancer Agents
50. Chemical Ordering in Binary Alloy Nanoparticles
51. Metal and Metal Oxide Nanoparticle Catalysis
52. Development of Chemical Sensors for Airborne Pollutants
53. Synthesis of Nanostructured Thermoelectrics: Materials that Convert Heat into Electrical Power
54. Metal-Organic Frameworks for Gas Separations and Catalysis
55. Antibiotic Resistance of Gram-Positive Pathogens
56. Electron Transfer in DNA Processing Enzymes
57. Biochemistry of Chromium
58. Metallotherapeutics
59. Synthesis of Agents for the Treatment of Diabetes
60. DNA Origami without the DNA
61. Fluorescent Nucleosides for DNA and RNA
62. Ethics in Chemistry

Evaluation Report
Summer Research Experiences for Undergraduates (REU) Program

Attn: Monika Agin
Summer REU Program
Dept. of Chemistry and Biochemistry, Box 870336
The University of Alabama
Tuscaloosa, AL 35487

Student's name: _____

Instructions to Reference: Please comment on the applicant's background and achievement in chemistry, laboratory skills, and potential for independent study. You may mail this form and any attachments to the above address, or email to mjagin@ua.edu. Thank you for your help.

Evaluation of Student	Excellent					Poor
Work habits	1	2	3	4	5	No basis to judge
Ability to follow directions	1	2	3	4	5	No basis to judge
Scientific curiosity	1	2	3	4	5	No basis to judge
Maturity	1	2	3	4	5	No basis to judge
Chemical knowledge for college level	1	2	3	4	5	No basis to judge

Name: _____ Date: _____

Position or Title: _____