 **UNI**

## ACS PRF UNDERGRADUATE NEW INVESTIGATOR (UNI) RESEARCH GRANT

The following comments are presented to assist you in the preparation of a proposal for an Undergraduate New Investigator research grant-in-aid. See also **ELIGIBILITY, TERMS, AND CONDITIONS** on page v. Only faculty with appointments in ***departments that do not offer the doctoral deg****ree* are eligible for Undergraduate New Investigator research grants.

**Nature and Scope of the Research:** American Chemical Society Petroleum Research Fund (ACS PRF) research grants are made to non-profit institutions within the United States for regularly appointed scientists/engineers whose research may be sponsored in accordance with the Agreement of Transfer of Trust:

“The recipient (ACS) shall use all funds exclusively for advanced scientific education and fundamental research in the ‘petroleum field,’ which may include any field of pure science which in the judgment of (ACS) may afford a basis for subsequent research directly connected with the petroleum field.”

The ACS PRF Undergraduate New Investigator (UNI) grants program is focused on providing start-up funding for scientists/engineers who are faculty members in non-doctoral departments, and who are within the first three years of their first academic appointment at the level of Assistant Professor or the equivalent. UNI grants provide financial incentives for students at those institutions to become involved in research activities leading to employment or continued study in graduate school.

The proposed research must be different from that conducted previously by the PI as part of their graduate or postdoctoral studies. Proposals that the PRF Committee determines are a logical extension of an investigator’s previous research may be denied as “not a new direction.” ACS PRF will not support a proposal having overlap, or partial overlap, with research funded by another agency.

Note that fundamental research is required as opposed to applied research or methods development. All UNI proposals will be reviewed for the following required elements: ***completeness and correctness of the application, fundamental nature of the research topic, relevance to petroleum or fossil fuels, and description of the impact on advanced scientific education of students.***

**Funding Criteria:** The PRF Committee makes relative rankings of proposals, and recommendations for funding, on the basis of the following criteria:

* The overall quality, significance, and scientific merit of the proposed research, including the extent to which it will increase basic knowledge and/or stimulate additional research. Included in this assessment is a measure of the likelihood that the stated scientific goals will generate publishable results.
* The extent to which advanced scientific education will be enhanced through the involvement of students in the research, and will encourage students to pursue careers in scientific or engineering fields.
* The extent to which the proposed research differs from prior graduate and postdoctoral research.
* The impact of funding the research, including the effect on the principal investigator’s overall research program.
* The qualifications or potential of the principal investigator and adequacy of the facilities to conduct the research. Proposals from institutions with little or no tradition of research will benefit from statements of institutional support, limited to one page, and attached to the end of the proposal.
* All Principal Investigators must describe any significant risks or hazards that may be encountered in the proposed work, and how these risks or hazards would be mitigated.

**Eligibility:** To be eligible as a principal investigator for an Undergraduate New Investigator grant, the applicant must be a member of the faculty of a college or university within the United States in a department without a doctoral program; be within the first three years of **their first academic appointment** as a regular faculty member; have completed all requirements for the Ph.D. (however, an application may be submitted before the degree has been awarded); and be appointed at the rank of Assistant Professor or the equivalent. In addition, applicants must meet the following three criteria:

1. The non-profit institution submitting the proposal must certify that the individual listed as principal investigator on the cover page qualifies as a principal investigator under the institution’s policies.
2. In view of the long-standing policy of The ACS Petroleum Research Fund to give priority to support of students, the principal investigator must be eligible to serve as the formal, official supervisor of undergraduate students.
3. The term of appointment of the principal investigator must promise reasonable continuity of service. The appointment should continue at least through the period of funding requested in the proposal.

It is assumed that tenure-track faculty meet these criteria. If you are not tenure-track, include a letter from your Department Chair verifying that you meet all three of the ACS PRF eligibility criteria.

**Budget:** The PRF Committee requires that at least 40 percent of the total budget be devoted to support the education and training of students. See item 4 below for details. A budget justification is required as Part I of the application. If you have any questions about allowable budget allocations, please contact the appropriate Program Manager **before** submitting a proposal. For proposals that are funded, the budget becomes part of the grant agreement. Revisions to the grant budget can only be made **with prior approval** of ACS PRF.

1. *Request*: Proposals request $55,000 for two grant years. The total budget may be divided among years according to the needs of the project. The normal ACS PRF budget year extends from September 1 to August 31. The first grant year may begin earlier than September 1, but must start on the first day of a month and end on August 31 of the following year. **A starting date earlier than September 1 will result in a first budget period longer than twelve months.**
2. *Excluded Charges:* No overhead costs may be charged. Secretarial and/or administrative salaries are considered part of regular departmental expenses and should not be included in proposed budgets or charged against the grant. Funds ***may not*** be used to support postdoctoral fellows, doctoral students, laboratory technicians, contractors, consultants, or visiting faculty.
3. *Principal Investigator Stipend:* The proposed budget may include a contribution to the principal investigator’s summer salary, with an upper limit of $8,000 per grant year, ***including fringe benefits***, to a maximum of $16,000. This limit does ***not*** change as a result of time extensions.
4. *Support of Students:* Total student support must be at least 40% of the grant budget. Grant funds must be used to support undergraduate students **in each year** of the funded research, and M.S. students may also be supported. Field Work expenses for students, including transportation, lodging, etc. may be considered student support, and must be described in **Part I Budget Justification**.
5. *Travel:* A maximum of $2,000 per grant year, or $4,000 total, may be budgeted for conference travel. This limit does ***not*** change as a result of time extensions. Support of student travel to scientific meetings is encouraged. Note that scientific work performed away from the home institution is considered field work and is budgeted separately.
6. *Capital Equipment:* Requests for capital equipment on UNI grant proposals **are discouraged**. However, a limited amount of capital equipment funds (≤ $5,000) may be included in the proposed budget, with justification and description of institutional cost-matching (if any) in **Part I Budget Justification**.

**Carryover and Time Extensions**: Funds that are unexpended at the end of an annual grant period may be carried forward into the next period in the same budget category. If unexpended funds remain in the grant account at the expiration of the original grant period, an extension of time without commitment of additional funds may be requested. A maximum of two one-year time extensions may be approved provided reporting requirements are up to date.

# Proposal Submission:

1. *Format, Signatures:* Complete and fully signed proposals on the **current version** of the application form (this document) are submitted as a single PDF, using the online proposal submission web site at **www.acsprf.org** (follow the Undergraduate New Investigator link). Note that the footer of the application form contains the date of the PRF Committee meeting at which the proposal will be considered; this date is also on the watermark of each page of the application form. No proposals will be accepted on prior versions of ACS PRF application forms.
2. *Page Order:* A complete proposal includes the following: pages 1 through 6 of the application with signatures on the title page and budget page; proposal abstract; proposal narrative with **word count** on the last page; references cited; and any supporting documentation such as letters of collaboration, etc. (if applicable). **Please do not submit the blue-text instruction pages (pp. i-v)**. Number the pages of your proposal in the footer, with the abstract as Page 1. No institutional cover letter is required; if one is included, please place it after the references.
3. *Length Restrictions*: The PRF Committee has set an upper limit of 4,000 words, double-spaced, in 12-point font (**Times Roman, Arial, or Courier**), with one-inch margins, for the scientific text of the narrative portion of the proposal, excluding abstract, figures, and references. The word count is entered at the end of the proposal narrative. Proposals that exceed this limitation will not be considered. The abstract of the proposal should not exceed 250 words.
4. *Limitations*: An investigator may have only one active ACS PRF grant, or proposal under consideration, at any time. A new investigator is limited to three UNI applications considered and/or one UNI grant funded in his/her career. An investigator may submit only one research proposal for consideration at a PRF Committee meeting.
5. *Safety Statement*: All principal investigators must describe any significant risks or hazards that may be encountered in the proposed work, and how these risks or hazards would be mitigated. Web links to relevant references, and illustrative examples of risk assessments and mitigation strategies, are at [www.acs.org/safety](http://www.acs.org/safety) and also on the PRF Website.
6. *Additional Material*: **If this is a resubmission of a previously denied proposal, you will need to answer the question “What has been changed in this revised version?” in the online submission form.**

**The ACS Petroleum Research Fund reserves the right to scan proposals for plagiarism.**

Principal Investigators must keep the ACS PRF office advised of the status of applications for research support at other agencies while your proposal is under consideration by The ACS Petroleum Research Fund.

Checklist of Common Errors - Please Review Carefully Before Submitting a Proposal

Most unsuccessful proposals have problems with one or more of the following criteria. If in doubt, please call ACS PRF (202-872-4481) or email the appropriate Program Manager before the submission deadline. Program Managers and their email addresses are listed on the “Contact PRF” page of our website (www.acsprf.org).

1. Topic outside the scope of ACS PRF. Research topics within all areas considered by the PRF Committee are listed on our website (www.acsprf.org), along with “Research Topics NOT Supported by ACS PRF.”
2. Missing or insufficient statement of petroleum relevance (*i.e.,* How is the proposal “advanced scientific education and fundamental research in the ‘petroleum field’?” with the definition of ‘petroleum field’ in the downloadable “Agreement of Transfer of Trust” document.) This petroleum relevance statement is entered on the online submission page before the PDF file of the proposal is uploaded.
3. Old version of the application form. No proposals will be accepted on previous versions of ACS PRF application forms. The footer of the application form contains the date of the PRF Committee meeting at which the proposal will be considered; this date is also on the watermark of each page of the application form.
4. Incomplete application. No late submissions or document substitutions after the deadline are allowed. Early submissions are encouraged to allow for the possibility of being notified of errors that can be corrected with time to resubmit.
5. Proposal budget for the wrong amount (must be $55,000). If necessary to make the total request equal to this amount, add the “extra dollars” to the student support categories, or to the Supplies and Services budget.
6. Insufficient student support. The PRF Committee requires at least 40 percent of the total budget be devoted to support the education and training of students (undergraduate research assistants, Master’s students). See item 4 on page ii.
7. Principal Investigator salary over the maximum allowable amount of $8,000 per year (*this amount includes fringe benefits*). The limit on PI Salary does not change as a result of any no-cost time extensions.
8. Travel budget over the maximum allowable amount of $2,000 per year. This is travel to meetings or symposia, to present research results. Travel to obtain data is part of the “Field Work” budget category.
9. Proposal longer than 4,000 words, double-spaced in 12-point font. The word count is entered at the end of the proposal narrative. Proposals that exceed this limitation will not be considered.
10. Missing information for the PI. Include all academic degrees, institution and date received, the name(s) of the dissertation director(s), and any post-doctoral supervisor(s), if appropriate.
11. Missing or incomplete information on suggested reviewers. Include the names, organizational affiliation, and email addresses of at least six peer experts who are qualified, willing to take the time to evaluate the proposed research, and who have no conflicts of interest with the PI. This information is required on both the application form and the online submission form.
12. Missing signatures. The signatures of the Principal Investigator and an authorized official of your institution are required on both the title page and the budget page. The institutional official is not the Department Chair, but the person who is authorized to commit the PI’s institution to performing the proposed research. Both signatures are required on both pages.
13. Incomplete reference citations. Include the names of all authors, complete article title, journal title, year of publication, volume number, and pages of cited article. Do not use *“et al.”* in reference citations.
14. No outline of revisions. For a previously denied proposal, which has been revised and resubmitted, the PI did not address reviewers’ concerns/comments and did not include, with the application, a summary of major changes.
15. Safety statement missing. Principal Investigator has failed to provide required risk assessment and mitigation strategies in their proposal.

# Guidelines for Text of the Proposed Research:

# The scientific text of the proposal should conform to the following guidelines:

## The first section of the proposed research should be an abstract of no more than 250 words. (The abstract is also entered as part of your online application on the proposal submission website.) The abstract should present the rationale of the research, its scientific objective, and an estimate of the significance to the field of research if the objective is reached.

## The body of the narrative should expand upon the salient points presented in the abstract. In addition, it should provide an introduction of the proposal topic, a detailed description of the research plan including tables and figures, a survey of pertinent literature (see Part D below), and any non-scientific matters that require explanation (for example, plans for access to specialized equipment, justification for special budgetary requests, etc).

## Please number the pages of your proposal in the footer, with the abstract as Page 1. Print the word count of the proposal narrative (Proposal Narrative = nnnn words) at the end of the proposal narrative, before the reference citations.

## For reference citations, include the names of all authors, complete article title, journal title, year of publication, volume number (if any), and pages of cited article. Do not use et. al. For example:

### Dunn, D.A., Lee, B.I., Fahr, A., and Clancy, T.C., Characterization and Analysis of Oil-Shale Kerogen from West Virginia. *Journal of Petroleum Chemistry*, 2015, Volume 16, 200-215.

**When possible, please include a web link to the cited paper or abstract.** Please underline student authors in listings of your publications and presentations.

## The proposal should be concise yet have an adequate presentation and justification of the research idea. The PRF Committee has set an upper limit of 4,000 words, double-spaced in 12-point font (Times Roman, Arial, or Courier), with one inch margins for the scientific text of proposals; this word limit excludes abstract, figures, tables, equations, and references. Proposals exceeding this length will be denied without review.

## A 100-word statement of petroleum-relevance (i.e., How is the proposal “fundamental research in the petroleum field”?) is required as part of the proposal submission. This statement is entered in the online submission form before the PDF of the proposal is uploaded.

## Do not attach preprints or reprints of articles to proposals. Information that has not yet been published may be included in the text of the proposal. Updates regarding pending proposals with other agencies should be forwarded to your ACS PRF Program Manager. No additional material may be submitted while a proposal is under review.

**ACS PRF UNDERGRADUATE NEW INVESTIGATOR RESEARCH GRANTS**

**ELIGIBILITY, TERMS, AND CONDITIONS**

1. ACS PRF Undergraduate New Investigator research grants are made to non-profit institutions within the U.S. for regularly appointed scientists/engineers whose research may be sponsored by ACS PRF in accordance with subsection (a) of Article SECOND of the Agreement of Transfer of Trust creating the American Chemical Society Petroleum Research Fund (Transfer Agreement), dated October 25, 2000. To be eligible for an Undergraduate New Investigator research grant an investigator must:

Be a member of the faculty of a college or university within the United States in a department without a doctoral program; be within the first three years of their first academic appointment as a regular faculty member; have completed all requirements for the Ph.D. (however, an application may be submitted before the degree has been awarded); and be appointed at the rank of Assistant Professor or the equivalent. In addition, applicants must meet the following three criteria. It is assumed that tenure-track faculty meet these criteria.

* 1. The non-profit institution submitting the proposal must certify that the individual listed as a principal investigator on the cover page qualifies as a principal investigator under the institution’s policies.
  2. In view of the long-standing goal of The ACS Petroleum Research Fund to involve undergraduate students in research, the principal investigator must be eligible to serve as the formal, official supervisor of undergraduate students.
  3. The term of appointment of the principal investigator must promise reasonable continuity of service. The appointment should continue at least through the period of funding requested in the proposal.

1. ACS PRF Undergraduate New Investigator grants are $55,000 for a two-year period. This amount is exclusive of any added research supplements that might be recommended and authorized to further assist the principal investigator. ACS PRF grants do not include a contribution to institutional overhead or administrative charges. Shifts in budget category allocations require ***prior approval*** of ACS PRF.
2. The following limitations apply and do not change as a result of time extensions:
   1. To provide the opportunity for full-time research during the summer months, the principal investigator may request a contribution to his or her summer salary, with an upper limit of $8,000 per grant year, ***including fringe benefits***, to a maximum of $16,000.
   2. Except for field work, travel expenses (including scientific meetings) shall not exceed $2,000 per grant year, or $4,000 total.
3. ACS PRF Undergraduate New Investigator grants **must** include support of undergraduate students **in each year** of the funded research. M.S.-level graduate students can be supported only if undergraduates are also supported by this grant. Funds may **not** be used to support post-doctoral associates, doctoral students, laboratory technicians, contractors, consultants or visiting faculty.
4. The institution, by acceptance of this grant, provides assurance that support normally provided by the institution for research of the faculty member will not be diminished.
5. At the end of each grant year, the grantee will submit a financial report, a report of progress, and a personnel statement. Of the support given, funds remaining at the end of each grant year may be carried forward into the next. If funds remain at the expiration of the grant and the principal investigator plans to continue to work on the project, time extensions may be approved by the ACS Petroleum Research Fund, for no more than two years beyond the original grant period, provided reporting requirements are up to date.
6. The Transfer Agreement, wherever applicable, and more specifically subsections (d), (e) and (f) of the Article SECOND thereof shall be complied with by the grantee institution accepting an ACS PRF grant. The reports required by said subsection (d), the publications required by said subsection (e), and a certified copy of any instrument of dedication required by subsection (f) of Article SECOND shall be submitted to the American Chemical Society by the grantee institution. A copy of said Transfer Agreement is attached hereto, is incorporated by reference, and wherever applicable shall be binding upon both the American Chemical Society and the grantee institution.
7. In order to comply with the precise requirements of subsection (e) of said Article SECOND of the Transfer Agreement, each publication prepared in connection with an ACS PRF grant, shall make acknowledgment for the support of this research to the donors of the American Chemical Society Petroleum Research Fund, in the following manner: “Acknowledgment is made to the Donors of the American Chemical Society Petroleum Research Fund, for support (or partial support) of this research.”
8. **In compliance with subsection (f) of said Article SECOND of the Transfer Agreement, any patent which is taken out by or on behalf of the principal investigator or the grantee institution shall be dedicated to the public, royalty free.**
9. Acceptance of an ACS PRF Undergraduate New Investigator grant will be conditioned upon agreement by the grantee institution that in the event the principal investigator is unable for any reason to conduct the research proposed, the funds, if previously paid by the American Chemical Society, shall, upon demand, be returned in full to the Society, and further, that in the event the principal investigator is unable for any reason to continue with the research after it has commenced, this grant shall be terminated forthwith and the unexpended and unencumbered balance of any funds theretofore advanced shall be returned to the Society.

**UNI**

**THE PETROLEUM RESEARCH FUND**

**UNDERGRADUATE NEW INVESTIGATOR PROPOSAL**

*(Please refer to statement of eligibility, terms, and conditions.)*

**PRIVILEGED COMMUNICATION**

This proposal is intended for review exclusively by ACS PRF staff, members of the PRF Committee, and outside reviewers officially asked to furnish scientific comments. It may not be transmitted to other parties, copied, or retained for future reference; please destroy after use.

(Principal Investigator) (Date of First Faculty Appointment)

(Department) (Institution) (City) (State)

**Title of Proposed Research:**

The ACS Petroleum Research Fund does not tolerate scientific misconduct. Scientific misconduct includes, but is not limited to, fabrication, falsification, and plagiarism. Instances of alleged or suspected scientific misconduct will be referred the PRF Committee for investigation. Upon a determination of scientific misconduct, the PRF Committee may, in its discretion, take any actions it deems appropriate. Such actions may include: disqualifying proposals from consideration; disqualifying individuals or institutions from submitting future proposals; revoking grant awards; contacting appropriate Officers of the relevant institution(s), such as the Dean, and/or Department Head of the investigator(s); and other such actions that the Board feels are appropriate.

The ACS Petroleum Research Fund reserves the right to scan proposals for plagiarism.

By signing below, we acknowledge that we have read and understand this scientific misconduct policy.

In addition, we confirm that, should this proposal be funded, the proposed budget will become the approved grant budget and funds will be spent according to the budget amounts and categories approved by ACS PRF. Any revisions to the approved budget require **prior approval** from an ACS PRF Program Manager.

Principal Investigator:

(Signature) (Date)

Officer of the Institution

Endorsing the Proposal:

(Signature) (Title) (Date)

**PROPOSED BUDGET — UNDERGRADUATE NEW INVESTIGATOR GRANT. Budget justification required in Part I.**

**Amount: $55,000 for two grant years.** Although some budget flexibility can be allowed, *with prior approval*, after a grant has been awarded, an outline of the projected use of the funds will aid in the evaluation of the proposal. Shifts in budget category allocations, consistent with the terms and conditions outlined on page v, and time extensions without the commitment of additional funds may be arranged ***with prior approval***. Funds not expended in one budget year may be carried forward into the next in the same category. **Do not add any categories to this budget page; the listed categories are the only expenditures approved.**

**Each period must end on August 31 and be at least twelve months in duration.**

**A starting date earlier than September 1 will result in a first budget period longer than twelve months.**

**For the Periods**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Approved budget categories: | \_\_\_\_\_\_\_\_\_ 1, \_\_\_\_\_\_\_\_ |  | Sept. 1, 2019 |
|  |  |  |  |
| 1. Salaries/stipends (**includes benefits**): | to Aug. 31, 2019 |  | to Aug. 31,2020 |
| a. Principal Investigator |  |  |  |
| (maximum: $8,000/ grant year) |  |  |  |
|  |  |  |  |
| b. Undergraduate Student(s)\* |  |  |  |
|  |  |  |  |
| c. Master’s Student(s) |  |  |  |
|  |  |  |  |
| 2. Expendable Supplies and Services |  |  |  |
| i.e., Chemicals, Glassware, Analyses, etc. |  |  |  |
|  |  |  |  |
| 3. Capital Equipment (max: $5,000; |  |  |  |
| see instructions) |  |  |  |
|  |  |  |  |
| 4. Travel (conference) |  |  |  |
| (maximum: $2,000/ grant year) |  |  |  |
|  |  |  |  |
| 5. Field work: |  |  |  |
| a. Principal Investigator |  |  |  |
|  |  |  |  |
| b. Students |  |  |  |
|  |  |  |  |
| **ANNUAL TOTALS** | **$** |  | **$** |

**TOTAL AMOUNT $55,000\***

Principal Investigator:

(Signature) (Date)

Officer of the Institution

Endorsing the Proposal:

(Signature) (Title) (Date)

Grantee Institution:

# \*Because students at U.S. military academies are prevented from receiving research stipends or support above their scholarships, faculty at these institutions may submit UNI proposals with a budget reduced by the expected 40% student support (i.e., total budget of $33,000).

# BUDGET JUSTIFICATION

Describe the intended use of grant funds including number and level of students receiving support. If field work is budgeted, describe the purpose and location, and the number of students involved. Additionally, specify how those funds will be allocated, *e.g.,* for transportation, lodging, etc.

# If capital equipment is requested, provide a detailed description of the proposed equipment and the need it fulfills in your research; also describe any matching funds that are to be obtained.

# EDUCATION AND EXPERIENCE

## Indicate all academic degrees, when and where received, and Ph.D. thesis title and supervisor. List postdoctoral appointment(s) and supervisor(s), if appropriate. List current and previous positions, in chronological order; significant honors and awards; and other pertinent biographical information.

## Do you currently hold a tenure-track position? \_\_\_\_\_\_\_\_. If not, please contact a PRF Program Manager. Proposals from faculty in non-tenure-track positions must include a letter from your department chair verifying you meet all three ACS PRF eligibility criteria (see pages i-ii).

# STATEMENT OF OPPORTUNITY TO CONDUCT RESEARCH AT GRANTEE INSTITUTION

## Highest academic degree awarded to students in your department:

## Available facilities - space, equipment, and supplies.

## Teaching duties - list the courses you are expected to teach in a typical year and give contact hours per week for lectures, recitations, and laboratory.

## Percentage of time devoted to research during academic year:

## Percentage of time devoted to research during summer: Please describe any factors that would significantly detract from available summer research time.

# CURRENT AND PENDING SUPPORT

## List any active research grants or other current financial support received for research. Give titles, amounts (annual direct costs; if more than one PI, indicate only your share of the granted amount), sources, time periods of awards, and relationship to this proposal. Use separate page if necessary; indicate “none” if applicable.

## List any other research grant applications pending. Give titles, amounts requested (annual direct costs), sources, relationship to this proposal, and date of funding decision for each application. Use separate page if necessary; indicate “none” if applicable.

## Describe any start-up support or funding. Use separate page if necessary; indicate “none” if applicable.

# PUBLICATIONS

List all research publications and presentations. Include titles, co-authors (underline student co-authors in both listings), and literature references. Use separate page(s) if necessary.

# SAFETY

Principal Investigators must describe any significant risks or hazards that may be encountered in the proposed work, and how these risks or hazards would be mitigated.

# SUGGESTED REVIEWERS

## Provide the names and addresses (including email) of at least six suggested reviewers who are experts in the field of the proposed research. Do not include former research mentors, students, collaborators, or colleagues at your current or former institutions. It is suggested that you include, but are not limited to, the names of experts residing in the United States, as well as faculty at primarily undergraduate institutions. Also, please do not list names of any reviewers whom you have suggested in any proposal previously submitted to ACS PRF within the past four years. Include the first name, middle initial (if any), academic institution, department, and email address of all suggested reviewers.

# NOTE: This information is also entered as part of the online application, on the proposal submission website.

# COLLABORATIONS

# If you will be collaborating with other scientists in the performance of the research described in this proposal, identify the collaborators and briefly indicate the nature of the collaboration. If any of these collaborators are current ACS PRF grantees or applicants, discuss the relationship between this proposal and the collaborator’s ACS PRF project. A letter from the collaborator(s), confirming the extent and nature of the collaboration, should be added to the application.

# SCIENTIFIC EDUCATIONAL IMPACT (Limited to one page; 12-point font)

# Provide a brief description of how your mentoring of students will impact scientific education in your institution and department. For example, you might discuss the level of student required to do the work, (i.e., freshman, sophomore, etc.); what role they will play in carrying out the proposed research in terms of intellectual and time commitment; and how the research carried out by the students will be a part of their degree requirements and departmental goals.