

Grant and Cooperative Agreement

CHOOSE ONE:
 COOPERATIVE AGREEMENT
 GRANT

CHOOSE ONE: EDUCATION FACILITIES RESEARCH SDCR TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER NRC-HQ-84-15-G-0043	2. SUPPLEMENT NUMBER M0001	3. EFFECTIVE DATE 06/30/2017	4. COMPLETION DATE
--	-------------------------------	---------------------------------	--------------------

5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) FLORIDA INTERNATIONAL UNIVERSITY 11200 SW 8TH ST PC 140 MIAMI FL 331992516	6. ISSUED BY U.S. NRC - HQ Mailing Address: Acquisition Management Division Mail Stop: TWFN-8E06M Washington DC 20555-0001
--	---

7. TAXPAYER IDENTIFICATION NO. (TIN)	9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone) SEE SCHEDULE
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.	

10. RESEARCH, PROJECT OR PROGRAM TITLE
SEE SCHEDULE

11. PURPOSE
SEE SCHEDULE

12. PERIOD OF PERFORMANCE (Approximately)
09/30/2015 through 06/29/2020

13A.	AWARD HISTORY	13B.	FUNDING HISTORY
PREVIOUS	\$450,000.00	PREVIOUS	\$450,000.00
THIS ACTION	\$450,000.00	THIS ACTION	\$30,030.00
CASH SHARE	\$0.00	TOTAL	\$480,030.00
NON-CASH SHARE	\$0.00		
RECIPIENT SHARE	\$363,101.00		
TOTAL	\$900,000.00		

14. ACCOUNTING AND APPROPRIATION DATA
2017-X0200-IUPNSE-60-60D099-52-S-164-1148-4110

PURCHASE REQUEST NO.	JOB ORDER NO.	AMOUNT	STATUS
RES-17-0184			

15. POINTS OF CONTACT

	NAME	MAIL STOP	TELEPHONE	E-MAIL ADDRESS
TECHNICAL OFFICER	NANCY V. HEBRON-ISREAL	TWFN10-B56	301-415-6996	Nancy.Hebron-Isreal@nrc.gov
NEGOTIATOR				
ADMINISTRATOR	M'LITA R. CARR		301-415-6869	MLita.Carr@nrc.gov
PAYMENTS				

16. THIS AWARD IS MADE UNDER THE AUTHORITY OF:
PURSUANT TO SECTION 31B AND 141B OF THE ATOMIC ENGERGY ACT OF 1954, AS AMENDED.

17. APPLICABLE STATEMENT(S), IF CHECKED: <input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS <input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT	18. APPLICABLE ENCLOSURE(S), IF CHECKED: <input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS <input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS
---	---

UNITED STATES OF AMERICA	COOPERATIVE AGREEMENT RECIPIENT
---------------------------------	--

CONTRACTING/GRANT OFFICER M'LITA R. CARR	DATE 06/29/2017	AUTHORIZED REPRESENTATIVE	DATE
---	--------------------	---------------------------	------

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
<p>CFDA Number: 77.008 DUNS Number: 071298814</p> <p>The purpose of this modification is to revise the grant in it's entirety:</p> <ol style="list-style-type: none"> 1. Add an additional program to the existing grant: Program B: entitled "Faculty Development for Ph.D. Radiochemistry Track"; 2. Update the Terms and Conditions; 3. Extend the grant's period of performance as a result of the addition of Program B. <p>As a result of this modification:</p> <ol style="list-style-type: none"> 1. Block 9, PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR, delete in its entirety and replace with the following: "Program A: [REDACTED], [REDACTED] [REDACTED]" 2. Block 10, RESEARCH, PROJECT, OR PROGRAM TITLE, delete in its entirety and replace with the following: "Program A: Faculty Development for Radiochemistry at FIU; Program B: Faculty Development for Ph.D. Radiochemistry Track"; 3. Attachments A, B, & C, delete in its entirety and replace with the following, see attached beginning on page 4. <p>Please see attached for detailed information. LIST OF CHANGES: Continued ...</p>					

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	<p>Period Of Performance End Date changed from 2018-09-29 00:00:00 to 2020-06-29 00:00:00</p> <p>Total Amount for this Modification: \$0.00</p> <p>New Total Amount for this Version: \$0.00</p> <p>New Total Amount for this Award: \$450,000.00</p> <p>New Issuing Address: US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP TWFN-8E06M WASHINGTON DC 20555-0001</p> <p>New Administration Address: US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP TWFN-8E06M WASHINGTON DC 20555-0001</p> <p>Payment: ASAP GRANT FUNDS REIMBURSEMENT SYS US TREASURY</p> <p>Period of Performance: 09/30/2015 to 06/29/2020</p>				

Attachment A - Schedule

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to two distinct programs with Florida International University, as described in Attachment B entitled "Program Description."

1. **Program A:** Faculty Development for Radiochemistry at FIU
2. **Program B:** Faculty Development for Ph.D. Radiochemistry Track

A.2 PERIOD OF GRANT

The effective date of this Grant is:

Program A: Faculty Development for Radiochemistry at FIU – The effective date of this grant is September 30, 2015. The estimated completion date of this Grant is September 29, 2018. Funds obligated hereunder are available for program expenditures for the estimated period: September 30, 2015 – September 29, 2018.

Program B: Faculty Development for Ph.D. Radiochemistry Track – The effective date of this grant is June 30, 2017. The estimated completion date of this Grant is June 29, 2020. Funds obligated hereunder are available for program expenditures for the estimated period: June 30, 2017 – June 29, 2020.

A.3 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. **Program A:** The total estimated amount of this program is \$663,101.00 for the three year period inclusive of \$213,101.00 in cost share. NRC hereby obligates the amount of \$450,000.00 for program expenditures during the period set forth above and in support of the Budget above. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.
2. **Program B:** The total estimated amount of this program is \$600,000.00 for the three year period; inclusive of \$150,000.00 in cost share. NRC hereby obligates the amount of \$30,030.00 for program expenditures during the period set forth above and in support of the Budget above. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.
3. Payment shall be made to the Recipient in accordance with procedures set forth in the Automated Standard Application for Payments (ASAP) Procedures set forth below.

A.4 AVAILABILITY OF FUNDS

1. Funding for this award is available through the date specified in Section A.2.2.
2. Additional funding for subsequent periods is optional and contingent upon and subject to the availability of funds as well as satisfactory performance of the most recent performance period.

A.5 BUDGET

Revisions to the grant award budget shall be made in accordance with Revision of Grant Budget in accordance with [2 CFR § 200.308](#).

Program A

- 1. Total Estimated NRC Amount: \$450,000.00
- 2. Total Obligated Amount: \$450,000.00
- 3. Cost-Sharing Amount: \$213,101.00
- 4. Activity Title: Faculty Development for Radiochemistry at FIU
- 5. NRC Project Officer: Nancy Hebron-Isreal
- 6. DUNS No.: 0712988140

	Year 1	Year 2	Year 3
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total Cost	\$ 149,933.85	\$ 149,999.82	\$ 150,066.33

Program B

- 1. Total Estimated NRC Amount: \$450,000.00
- 2. Total Obligated Amount: \$30,030.00
- 3. Cost-Sharing Amount: \$150,000.00
- 4. Activity Title: Faculty Development for Ph.D. Radiochemistry Track
- 5. NRC Project Officer: Nancy Hebron-Isreal
- 6. DUNS No.: 0712988140

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	NRC-HQ-60-17- FOA-0001				
a. Personnel	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]
b. Fringe Benefits	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
c. Travel					
d. Equipment	[REDACTED]	[REDACTED]			[REDACTED]
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
j. Indirect Charges	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
k. TOTALS (sum of 6i and 6j)	\$ 256,716.00	\$ 181,139.00	\$ 12,145.00	\$ 450,000.00	\$ 450,000.00
7. Program Income	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]

Authorized for Local Reproduction

Standard Form 424A (Rev. 7-97)
Prescribed by OMB (Circular A -102) Page 1A

ATTACHMENT B - PROJECT DESCRIPTION

Program A: Faculty Development for Radiochemistry at FIU

Principal Investigator: [REDACTED]

The **Objective** of this grant proposal is to support the recruiting and development of an early career professor in the FIU Department of Chemistry & Biochemistry. This position is instrumental for the growth of our Interdisciplinary Nuclear Program at FIU and of our Radiochemistry Ph.D. track, within the Chemistry graduate program, which is scheduled to be launched in Fall 2015. The new professor will train, educate, and mentor Ph.D. students and will establish a vigorous externally-funded research program, while engaging in nuclear and radiochemistry curriculum development. Ph.D. graduates will support the nuclear industry, national labs, government, and academia. This grant is expected to complement FIU's current NRC grants for Nuclear Research Fellowships and Scholarships.

Benefits: FIU's new Radiochemistry Ph.D. track and its growing nuclear program are critical to supplying needed nuclear professionals to replace an aging workforce. Our successful partnerships with Industry, such as Florida Power and Light (FPL) and government facilities, such as Savannah River National Laboratory (see letter of support) are evidence of the extensive interest shown for this needed program. The FIU Nuclear Scholars and Nuclear Fellows programs have increased interest among our students in nuclear & radiochemistry careers, and relevant research projects. FIU is at a critical point, ready to advertise nationally for a new professor in radiochemistry as well as recruit an inaugural class of students into the new Radiochemistry Ph.D. Track.

Background: Florida International University (FIU) has been developing a strong nuclear research and academic program since 2011. Faculty from several departments with niche expertise in: nuclear waste and remediation of DOE sites contaminated by radioactive isotopes; experimental nuclear physics; nuclear separations chemistry; nuclear forensics; and nuclear medicine have been collaborating and successfully securing funding ever since. In the remediation and nuclear physics areas FIU has over 20 years of expertise with over [REDACTED] of funding. The initial grant from FIU's Interdisciplinary Nuclear Research and Academics Program was an NRC grant for curricular development. NRC grants also fund the FIU Nuclear Research Scholarships and Nuclear Fellowship Programs. FIU has developed strong collaborative relationships with nuclear experts from DOE National Laboratories and industry and in 2014 Florida Power and Light (FPL) established the FPL Distinguished Nuclear Lecture Series at FIU. This series has brought several top nuclear speakers/researchers to FIU and students and faculty have met and discussed future collaborations with the speaker's organizations. Finally, in 2015 a PhD Radiochemistry Track was proposed and is expected to begin in Fall 2015 (pending final FIU Board of trustees approval).

There is a great need for radiochemists across many career areas in the US. FIU is rapidly growing its research and education capabilities in this area and this Faculty Development request for proposal arrived at the perfect time for FIU. [REDACTED]

[REDACTED] to support this proposal, demonstrating its strong commitment to the growth of our nuclear program.

Institutional Commitment and Responsibilities:

FIU has offered major cost shares on most nuclear related proposals such as a [REDACTED] cost share on the 2014 NRC grant, which established the FIU Nuclear Research Fellowship Program. In addition, FIU's Office of Research and Economic Development (ORED) has funded monies to establish and convene the world class FIU Nuclear Board of Advisors composed of 16 nuclear experts from national labs, academia, industry and government agencies. ORED has also funded business development time for members of the FIU Interdisciplinary Nuclear Research and Academic Development Program. Finally, FIU has supported the establishment of the Radiochemistry Ph.D. track and a new Health Physics academic program in the Department of Physics (currently under development). There is support at the Provost, Deans, and Chairs levels for growing these nuclear programs. See the attached letter from FIU's Office of Research and Economic Development and the Dean of Arts and Sciences to the external FIU Nuclear Board of Advisors as further evidence of FIU's institutional commitment.

1. Faculty Development and Mentoring Plan

At FIU and in the Department of Chemistry & Biochemistry, great importance is placed on mentoring new faculty. Good mentoring ensures that new faculty understand how to be effective in their research and teaching careers and hence how to progress toward tenure and beyond. It is critical that faculty be mentored in writing competitive grant proposals and intentionally develop their research careers; in being effective mentors of graduate students, undergraduates and postdoctoral fellows; and in effective teaching. The Department of Chemistry & Biochemistry has established a formal mechanism for mentoring new faculty. Upon joining FIU, each new faculty member is assigned a three-member mentoring committee composed of tenured faculty in the Department. The new faculty member may request particular faculty members for this committee, but ultimately the chair is responsible for the committee composition. One member is committee chair, and at least two must come from the new faculty member's division. The committee provides input to the new faculty member on all professional matters, with particular attention to preparation for the third-year review, and later for tenure. The new faculty member is encouraged to seek the input of the mentoring committee frequently, with formal meetings occurring at least annually. The Department Chair also has a mentoring role for this new hire since the Chair mentors all faculty members in the Department. In addition to the Department's mentoring program, FIU has a formal Faculty Mentor Program. Participation is voluntary, but the current Department Chair strongly encourages participation, and the two most recently hired assistant professors both actively participate and speak highly of the program. In this program, the mentee is matched with a tenured faculty member as mentor, generally chosen from outside the mentee's department to allow for franker discussion. The mentor and mentee sign an agreement so that the mentoring expectations are explicit. Besides one-on-one mentor-mentee meetings, a mentoring orientation is held at the beginning of each year, and workshops and meetings for all participants are held throughout the year. Examples of workshop topics are "Funding Your Research," "Tips to Tenure and Promotion," "Grant Writing & Evaluation", "Planning for NSF Submissions," "Summer Planning", and "Leadership."

In addition to these formal mentoring programs, FIU offers opportunities for faculty to develop grant-writing, mentoring skills, and teaching skills. ORED organizes targeted grant-writing workshops. The University Graduate School (UGS) is developing mentoring workshops in conjunction with its AGILE (Academy of Graduates for Integrative Learning Experiences) program for graduate student development. The Center for the Advancement of Teaching

(CAT) offers teaching workshops each semester. For example, CAT organizes book groups in which 5-10 faculty participants read and discuss a book pertinent to teaching, such as *How Teaching Works*, typically bringing together faculty from across the disciplines. FIU has a newly formed STEM Transformation Institute to promote pedagogical innovation in STEM disciplines. Biweekly faculty meetings are organized by this new institute to promote Discipline-Based Education Research, and development of inquiry-based teaching methods that bring the research lab into the classroom.

Thus FIU has many opportunities for the mentoring of new faculty. The faculty members are our primary research and educational resource, and so faculty development is taken very seriously. In addition to all the mentoring mechanisms described above, FIU has cost-shared time for [REDACTED] to mentor the newly hired early-career professor, and ensure the smooth integration of his/her research program into our rapidly growing nuclear research and education programs. Specifically, [REDACTED] will ensure that there are collaborative research opportunities and joint proposal submissions both with other FIU faculty, as well as with external collaborators from academia, industry and government.

2. Recruitment and Selection Process Ensuring Best-Qualified Applicants are Selected based on Potential Capabilities to become Tenured, Research Professors.

A tenure track position at the Assistant Professor level with teaching duties in Physical Chemistry and research in the broadly defined Radiochemistry field will be advertised by the Department in Summer 2015. The position will be advertised nationally by a posting in the weekly American Chemical Society journal *Chemical & Engineering News*, which is also accessible on-line and is the principle means of reaching out to chemistry job seekers. Additionally, individual letters will be sent to group leaders in National Laboratories (e.g., Los Alamos, Oak Ridge) and academic institutions that have active research programs in radiochemistry, requesting that the FIU opening be brought to the attention of recent Ph.D. graduates and postdoctoral fellows. Letters will also be sent to selected group leaders abroad in countries with a tradition in radiochemistry research (e.g., U.K., Germany, France) using personal contacts of FIU faculty members. The published advertisement and letters will encourage women, minorities and people with disabilities to apply for the position.

An *ad hoc* Search Committee of six faculty members, including the Chair and [REDACTED] will vet the pool of applicants and will identify the top ten candidates. Next, the Chair will call a Department meeting for the purpose of selecting two-three candidates who will be invited to on-site interviews to take place during the winter months of 2015-2016. According to FIU's hiring practices, the selection process will be focused on the following qualifications of the candidates:

- High quality academic training and previous research experience that demonstrate the candidate's in-depth understanding of the field.
- Innovative and well-thought-out research plans that will have a high probability of being independently funded by federal agencies, such as the US-DOE and the NSF (i.e. via the NSF-CAREER mechanism).
- Complementarity of the candidate's research plans with ongoing projects in the Dept.
- Organization and clear delivery of lectures.
- Capacity and willingness to contribute to teaching graduate and undergraduate courses and develop new courses in the Radiochemistry program.

- Capacity and willingness to participate in collaborative grant proposals with other FIU scientists, as a PI, or co-PI.

The Department will select the candidate who best combines the aforementioned qualities, demonstrating his/her capacity to become an inspiring lecturer and research group leader and carve out a research niche area within the Radiochemistry, field leading to national and international recognition. The search committee will also request the opinion of graduate students and postdoctoral fellows in order to appreciate how younger scientists view the candidates and their lecturing skills. During the on-site interviews, the expectations of the Department with regard to the performance level of an Assistant Professor that will lead to tenure will be explained to the candidates. The candidates will also be interviewed by upper FIU administration officials whose opinion will be taken into account before the final selection will be made.

The Department of Chemistry and Biochemistry has an excellent record of identifying, hiring, and nurturing faculty members into success for its other two Tracks in Environmental Chemistry (since 2011) and Forensic Chemistry (since 2005). All these faculty members have been granted tenure and have led their respective Tracks to national and international recognition, as manifested by the placement of their graduates to postdoctoral positions in prestigious academic and national laboratories.

3. Management Structure and Capability for Administering the Program

The Principal Investigator will be solely responsible for planning, directing, and executing the proposed project. [REDACTED] provide support for project management for ensuring metrics and methodologies in the Development Plan (above) and the Evaluation Plan (below) are assessed and progress is documented each semester. [REDACTED] time is cost-shared by FIU. The recruitment, selection, and mentoring of the new faculty members is well established at FIU, which has several thousand faculty members and instructors and has embarked on a course of very rapid growth in students and faculty over the past five years. While reports are due on NRC grants every six months, FIU will document progress every semester of the mentoring and metrics of the evaluation plan to ensure the new hire is succeeding with the establishment of a sustainable Ph.D. Radiochemistry track as well as making good progress toward tenure. FIU will document assessment of the methodologies for measuring the effectiveness of the development program described in the next section. The PI on this grant is the Chair of the Chemistry and Biochemistry Department and this position grants him authority to gather sensitive data on the mentorship process as well as results from the Evaluation Plan implemented by the new faculty member's mentoring committee.

4. Evaluation Plan

The faculty member's progress toward tenure will be evaluated each semester, with a process in place for providing feedback both to the faculty member and the NRC. In this way the long-term success of the faculty member in establishing a productive career will be facilitated, and the NRC will be kept apprised. The Department has in place measures to ensure each new faculty member's success (see mentoring section). These include a Department-based mentoring committee that meets at least annually to advise the candidate; an optional University-based mentor/mentee relationship; annual evaluations made by the chair that include both written and face-to-face feedback; a formal third-year review process that begins at the

department level and includes feedback from the dean and the provost; and the tenure process, which normally takes place during the faculty member's sixth year of employment. These standard measures will be supplemented with additional feedback for the faculty member supported by this NRC grant. Progress toward tenure and career development will be assessed on the basis of the following metrics:

Metric topic	How measured
Publication record	List, number, venue (impact factor)
Grantsmanship	List of grants submitted
	List of grants awarded
Graduate student mentorship	Number attracted, progress toward degree, Publications with grad. students
Undergraduate student mentorship	Numbers attracted, involvement with NRC Nuclear Research Scholars, publications
Collaborations	Joint papers, joint grant proposals
Mentoring committee annual report	List of recommendations, evaluation
Chair annual evaluation	List of recommendations, evaluation
Teaching	Student evaluations
	Peer evaluations
	Teaching workshops participated in
Service	Involvement with the growth of FIU Nuclear Program and FIU's Nuclear Scholars and Nuclear Fellows programs
	Dept. Committees & Governance involvement

5. Additional Support and Collaborations

Florida International University has established collaborations with nuclear chemists and scientists at: Savannah River National Lab (SRNL); Oak Ridge National Lab; Pacific Northwest National Lab; and Lawrence Berkeley National Laboratory. Attached to this proposal is a signed SRNL letter of collaboration for the new Radiochemistry Ph.D. track which will leverage personnel and resources to support this track and hence the newly-hired professor. SRNL has been partnering with FIU for years, has actively funded projects at FIU, and currently works with FIU on multiple environmental tasks. FIU has collaborated on several research proposals with [REDACTED] (ORNL), a world-renowned Radiochemist. FIU is also working to develop additional collaborations with two nuclear-related research divisions at ORNL. Finally, representatives from companies and additional national labs have expressed interest in supporting FIU's Radiochemistry track and in recruiting our graduates. We will work to develop partnerships with these organizations and make this new track sustainable for many years to come. As FIU launches this program it will continue to reach out to the nuclear industry and government agencies in need of nuclear chemists and radiochemists. Internships, collaborative R&D, placement of graduates in career positions, and access to each other's research labs and facilities are areas for collaboration with these current and new partners.

6. Summary

There is a great need for radiochemists across many career areas in the US. FIU is rapidly growing its research and education capabilities in this area. FIU is pursuing several corporate

and national laboratory official collaborations in Radiochemistry (see SRNL letter). This Faculty Development proposal requests \$450K. **FIU has cost shared** [REDACTED] to support this proposal, demonstrating again its strong commitment to the growth radiochemistry, health physics and other nuclear areas. FIU has developed an evaluation plan and a mentoring plan that adds additional support to the new faculty hire over and above the many metrics and layers of mentoring already established at FIU for new faculty and described above.

Program B: Faculty Development for Ph.D. Radiochemistry Track
Principal Investigator: [REDACTED]

Background

The **Objective** of this grant proposal is to support the recruitment and development of an early career professor (ECP) in the FIU Department of Chemistry & Biochemistry. This position is important for the growth and sustainability of FIU's Interdisciplinary Nuclear Research Program and of our Radiochemistry Ph.D. track, within the Chemistry graduate program, launched August 2015. The ECP hired with this grant funding will train, educate, and mentor Ph.D. students and will establish a vigorous externally-funded research program, while engaging in nuclear, radiochemistry and organic chemistry curriculum development. Radiochemistry Ph.D. graduates will support the nuclear industry, national labs, government, and academia. This grant proposal complements FIU's current NRC grants for Nuclear Research Fellowships and Scholarships.

Benefits: FIU's new Radiochemistry Ph.D. track and its growing nuclear program are critical to supplying needed nuclear professionals to replace an aging workforce. Our successful partnerships with Industry, (e.g., Florida Power and Light (FPL)) and government facilities (e.g., Savannah River National Laboratory (see letter of support), PNNL, ORNL and LANL) are evidence of the extensive interest shown for this needed program. The FIU Nuclear Scholars and Nuclear Fellows programs have increased interest among our students in nuclear & radiochemistry careers, and relevant research projects. FIU is ready to advertise nationally for a ECP with expertise in organic chemistry and knowledge in radiochemistry. FIU has 4 Ph.D. students in the new Radiochemistry Ph.D. Track and expects to recruit 2 more in the current academic year.

Background: Florida International University (FIU) has been developing a strong nuclear research and academic program since 2011. Faculty from several departments with niche expertise in: nuclear waste and remediation of DOE sites contaminated by radioactive isotopes; experimental nuclear physics; nuclear separations chemistry; nuclear forensics; and nuclear medicine have been collaborating and successfully securing funding since 2011. In the remediation and nuclear physics areas FIU has over 20 years of expertise with over [REDACTED] of funding. The initial grant from FIU's Interdisciplinary Nuclear Research and Academics Program was an NRC grant for curricular development for 10 new nuclear courses. NRC grants also fund the FIU Nuclear Research Scholarships and Nuclear Fellowship Programs. FIU has developed strong collaborative relationships with nuclear experts from DOE National Laboratories and industry. In 2014 Florida Power and Light (FPL) established the FPL Distinguished Nuclear Lecture Series at FIU. This series has brought several top nuclear speakers/researchers to FIU and students and faculty have met and discussed future collaborations with the speaker's

organizations. In 2013 FIU established an external Nuclear Board of Advisors for Science, Engineering and Medicine (NBASEM) comprised of 16 world-class nuclear experts from academia, industry and national laboratories. In August 2015 a PhD Radiochemistry Track was launched.

There is a great need for radiochemists across many career areas in the US. FIU is rapidly growing its research and education capabilities in this area and this Faculty Development request for proposal arrived at the perfect time for FIU. **FIU has cost shared \$150,000** to support this proposal, demonstrating its strong commitment to the growth of our nuclear program.

Institutional Commitment and Responsibilities:

FIU has offered major cost shares on most nuclear related proposals such as a [REDACTED] cost share on the 2014 NRC grant, which established the FIU Nuclear Research Fellowship Program. In addition, FIU's Office of Research and Economic Development (ORED) has funded monies to establish and convene the world class FIU Nuclear Board of Advisors composed of 16 nuclear experts from national labs, academia, industry and government agencies. ORED has also funded business development time for members of the FIU Interdisciplinary Nuclear Research and Academic Development Program. Finally, FIU Administration has supported the establishment of the Radiochemistry Ph.D. track (launched Aug. 2015) and a new Health Physics academic program (launched Aug. 2016). There is support at the Provost, Deans, and Chairs levels for growing these nuclear programs.

1. Faculty Development and Mentoring Plan

At FIU and in the Department of Chemistry & Biochemistry, great importance is placed on mentoring new faculty. Good mentoring ensures that new faculty understand how to be effective in their research and teaching careers and hence how to progress toward tenure and beyond. Faculty must be mentored in: writing competitive grant proposals; developing their research careers; being effective mentors of graduate students, undergraduates and postdoctoral fellows; and excellent teaching. The Department of Chemistry & Biochemistry has established a formal mechanism for mentoring new faculty. Upon joining FIU, each new faculty member is assigned a three-member mentoring committee composed of tenured faculty in the Department. The new faculty member may request particular faculty members for this committee, but ultimately the chair is responsible for the committee composition. One member is committee chair, and at least two must come from the new faculty member's division. The committee provides input to the new faculty member on all professional matters, with particular attention to preparation for the third-year review, and later for tenure. The new faculty member is encouraged to seek the input of the mentoring committee frequently, with formal meetings occurring at least annually. The Department Chair also has a mentoring role for this new hire since the Chair mentors all faculty members in the Department. In addition to the Department's mentoring program, FIU has a formal Faculty Mentor Program. Participation is voluntary, but the current Department Chair strongly encourages participation, and the three most recently hired assistant professors both actively participate and speak highly of the program. In this program, the mentee is matched with a tenured faculty member as mentor, generally chosen from outside the mentee's department to allow for franker discussion. The mentor and mentee sign an agreement so that the mentoring expectations are explicit. Besides one-on-one mentor-mentee meetings, a mentoring orientation is held at the beginning of each year, and workshops and meetings for all participants are held throughout the year. Examples of workshop topics are

“Funding Your Research,” “Tips to Tenure and Promotion,” “Grant Writing & Evaluation”, “Planning for NSF Submissions,” “Summer Planning”, and “Leadership.”

In addition to these formal mentoring programs, FIU offers opportunities for faculty to develop grant-writing, mentoring skills, and teaching skills. ORED organizes targeted grant-writing workshops. The University Graduate School (UGS) is developing mentoring workshops in conjunction with its AGILE (Academy of Graduates for Integrative Learning Experiences) program for graduate student development. The Center for the Advancement of Teaching (CAT) offers teaching workshops each semester. For example, CAT organizes book groups in which 5-10 faculty participants read and discuss a book pertinent to teaching, such as *How Teaching Works*, typically bringing together faculty from across the disciplines. FIU has a newly formed STEM Transformation Institute to promote pedagogical innovation in STEM disciplines. Biweekly faculty meetings are organized by this new institute to promote Discipline-Based Education Research, and development of inquiry-based teaching methods that bring the research lab into the classroom.

Thus FIU has many opportunities for the mentoring of new faculty. The faculty members are our primary research and educational resource, and so faculty development is taken very seriously. In addition to all the mentoring mechanisms described above, FIU has cost-shared time for [REDACTED] to mentor the newly hired early-career professor, and ensure the smooth integration of his/her research program into our rapidly growing nuclear research and education programs. Specifically, [REDACTED] will ensure that there are collaborative research opportunities and joint proposal submissions both with other FIU faculty, as well as with external collaborators from academia, industry and government.

2. Recruitment and Selection Process Ensuring Best-Qualified Applicants are

Selected based on Potential Capabilities to become Tenured, Research Professors.

A tenure track position at the Assistant Professor level with teaching duties in Organic Chemistry and research in Organic and Radiochemistry fields will be advertised by the Department in October 2016. The position will be advertised nationally by a posting in the weekly American Chemical Society journal *Chemical & Engineering News*, which is also accessible on-line and is the principal means of reaching out to chemistry job seekers. Additionally, individual letters will be sent to group leaders in National Laboratories (e.g., SRNL, LANL, PNNL, and ORNL) and academic institutions that have active research programs in radiochemistry, requesting that the FIU opening be brought to the attention of recent Ph.D. graduates and postdoctoral fellows. Letters will also be sent to selected group leaders abroad in countries with a tradition in radiochemistry research (e.g., U.K., Germany, France) using personal contacts of FIU faculty members. The published advertisement and letters will encourage women, minorities and people with disabilities to apply for the position.

An *ad hoc* Search Committee of six faculty members, including the [REDACTED] will vet the pool of applicants and will identify the top ten candidates. Next, the Chair will call a Department meeting for the purpose of selecting two-three candidates who will be invited to on-site interviews to take place during the winter months of 2016-2017. According to FIU's hiring practices, the selection process will be focused on the following qualifications of the candidates:

- High quality academic training and previous research experience that demonstrate the candidate's in-depth understanding of the field.

- Innovative and well-thought-out research plans that will have a high probability of being independently funded by federal agencies, such as the US-DOE and the NSF (i.e. via the NSF-CAREER mechanism).
- Complementarity of the candidate's research plans with ongoing projects in the Dept.
- Organization and clear delivery of lectures.
- Capacity and willingness to contribute to teaching graduate and undergraduate courses and develop new courses in the Radiochemistry and Organic Chemistry programs.
- Capacity and willingness to participate in collaborative grant proposals with other FIU scientists, as a PI, or co-PI.

The Department will select the candidate who best combines the aforementioned qualities, demonstrating his/her capacity to become an inspiring lecturer and research group leader. The best candidate will be able to develop a research niche area within the Radiochemistry and organic chemistry fields leading to national and international recognition. The search committee will also request the opinion of graduate students and postdoctoral fellows in order to appreciate how younger scientists view the candidates and their lecturing skills. During the on-site interviews, the expectations of the Department with regard to the performance level of an Assistant Professor that will lead to tenure will be explained to the candidates. The candidates will also be interviewed by upper FIU administration officials whose opinion will be taken into account before the final selection is made.

The Department of Chemistry and Biochemistry has an excellent record of identifying, hiring, and nurturing faculty members into success for its other two Tracks in Environmental Chemistry (since 2011) and Forensic Chemistry (since 2005). All these faculty members have been granted tenure and have led their respective Tracks to national and international recognition, as manifested by the placement of their graduates to postdoctoral positions in prestigious academic and national laboratories.

3. Management Structure and Capability for Administering the Program

The Principal Investigator will be solely responsible for planning, directing, and executing the proposed project. [REDACTED] will provide support for project management for ensuring metrics and methodologies in the Development Plan (above) and the Evaluation Plan (below) are assessed and progress is documented each semester. The recruitment, selection, and mentoring of the new faculty members is well established at FIU, which has several thousand faculty members and instructors and has embarked on a course of very rapid growth in students and faculty over the past five years. While reports are due on NRC grants every six months, FIU will document progress every semester of the mentoring and metrics of the evaluation plan to ensure the new hire is succeeding with the establishment of a sustainable Ph.D. Radiochemistry track as well as making good progress toward tenure. FIU will document assessment of the methodologies for measuring the effectiveness of the development program described in the next section. The PI on this grant is the [REDACTED] and this position grants him authority to gather sensitive data on the mentorship process as well as results from the Evaluation Plan implemented by the new faculty member's mentoring committee.

4. Evaluation Plan

The faculty member's progress toward tenure will be evaluated each semester, with a process in place for providing feedback both to the faculty member and the NRC. In this way the long-term success of the faculty member in establishing a productive career will be facilitated, and

the NRC will be kept apprised. The Department has in place measures to ensure each new faculty member's success (see mentoring section). These include a Department-based mentoring committee that meets at least annually to advise the candidate; an optional University-based mentor/mentee relationship; annual evaluations made by the chair that include both written and face-to-face feedback; a formal third-year review process that begins at the department level and includes feedback from the dean and the provost; and the tenure process, which normally takes place during the faculty member's sixth year of employment. In addition, [REDACTED] will provide mentorship. These standard and extra measures will be supplemented with additional feedback for the faculty member supported by this NRC grant. Progress toward tenure and career development will be assessed on the basis of the following metrics:

Metric topic	How measured
Publication record	List, number, venue (impact factor)
Grantsmanship	List of grants submitted
	List of grants awarded
Graduate student mentorship	Number attracted, progress toward degree, Publications with grad. students
Undergraduate student mentorship	Numbers attracted, involvement with NRC Nuclear Research Scholars, publications
Collaborations	Joint papers, joint grant proposals
Mentoring committee annual report	List of recommendations, evaluation
Chair annual evaluation	List of recommendations, evaluation
Teaching	Student evaluations
	Peer evaluations
	Teaching workshops participated in
Service	Involvement with the growth of FIU Nuclear Program and FIU's Nuclear Scholars and Nuclear Fellows programs
	Dept. Committees & Governance involvement

5. Additional Support and Collaborations

Florida International University has established collaborations with nuclear chemists and scientists at the following DOE National Laboratories: Savannah River National Lab (SRNL); Oak Ridge National Lab; Pacific Northwest National Lab; Los Alamos National Lab. Attached to this proposal is a signed SRNL letter of collaboration for the new (2015) Radiochemistry Ph.D. track which will leverage personnel and resources to support this track and hence the newly-hired professor. SRNL has: partnered with FIU for years; actively funded projects at FIU; and currently collaborates with FIU on multiple environmental research efforts. FIU has collaborated on multiple research proposals and 1 funded project with [REDACTED] (ORNL), a world-renowned Radiochemist. Finally, representatives from companies and additional national labs have expressed interest in supporting FIU's Radiochemistry track and in recruiting our graduates. We will work to develop partnerships with these organizations and make this new track sustainable for many years to come. As FIU launches this program it will continue to reach out to the nuclear industry and government agencies in need of nuclear chemists and radiochemists. Internships, collaborative R&D, placement of graduates in career positions, and

access to each other's research labs and facilities are areas for collaboration with these current and new partners.

6. Summary

There is a great need for radiochemists across many career areas in the US. FIU is rapidly growing its research and education capabilities in this area. FIU is pursuing several corporate and national laboratory official collaborations in Radiochemistry (see SRNL letter). This Faculty Development proposal requests \$450K. **FIU has cost shared \$150,000** to support this proposal, demonstrating again its strong commitment to the growth radiochemistry, health physics and other nuclear areas. FIU has developed an evaluation plan and a mentoring plan that adds additional support to the new faculty hire over and above the many metrics and layers of mentoring already established at FIU for new faculty and described above.

ATTACHMENT C – STANDARD TERMS AND CONDITIONS

The Nuclear Regulatory Commission's Standard Terms and Conditions for U.S. Nongovernmental Recipients

Preface

This award is based on the application submitted to, and as approved by, the Nuclear Regulatory Commission (NRC) under the authorization [42 U.S.C. § 2051\(b\)](#), pursuant to section 31b and 141b of the Atomic Energy Act of 1954, as amended, and is subject to the terms and conditions incorporated either directly or by reference in the grant or cooperative agreement. The following also apply:

- Restrictions on the expenditure of Federal funds in appropriation acts, to the extent those restrictions are pertinent to the award.
- Code of Federal Regulations/Regulatory Requirements – [2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.](#)

Any inconsistency or conflict in terms and conditions specified in the award will be resolved according to the following order of precedence: public laws, regulations, applicable notices published in the Federal Register, Executive Orders (E.O.), Office of Management and Budget (OMB) Circulars, the NRC's Mandatory Standard Provisions, special award conditions, and standard award conditions.

Certifications and Representations: These terms incorporate the certifications and representations required by statute, executive order, or regulation that were submitted with the SF424B application through [GRANTS.GOV](#).

I. Mandatory General Requirements

The order of these requirements does not make one requirement more important than any other requirement.

1. Applicability of 2 CFR Part 200

All provisions of 2 CFR Part 200 and all Standard Provisions attached to this grant/cooperative agreement are applicable to the Recipient and to sub-recipients which meet the definition of "Recipient" in 2 Part [§200.86](#), unless a section specifically excludes a sub-recipient from coverage. The Recipient and any sub-recipients must, in addition to the assurances made as part of the application, comply and require each of its sub-awardees employed in the completion of the project to comply with [Subpart D](#) of [2 CFR Part 200](#) and include this term in lower-tier (sub-award) covered transactions.

Recipients must comply with monitoring procedures and audit requirements in accordance with [2 CFR Part 200, Subpart F—AUDIT REQUIREMENTS](#).

2. Award Package

The Recipient is obligated to conduct project oversight as may be appropriate, to manage the funds with prudence, and to comply with the provisions outlined in [2 CFR Part 200](#). Within this framework, the Principal Investigator (PI) named on the award face page, is responsible for the scientific or technical direction of the project and for preparation of the project performance reports. This award is funded on a cost-reimbursement basis, not to exceed the amount awarded as indicated on the face page, and is subject to a refund of unexpended grant funds to the NRC.

The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements related to its grant award. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any financial or fiduciary responsibilities or obligations arising under its grant, including sub-contracts and sub-awards, or any other contractual or financial obligation. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction. See [2 CFR § 200.318\(k\)](#), General Procurement Standards.

Subawards

[Appendix II to Part 200](#) Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

Sub-recipients, sub-awardees, and contractors have no relationship with NRC under the terms of this grant/cooperative agreement. All required NRC approvals must be directed through the Recipient to NRC. See [2 CFR § 200.318](#).

Nondiscrimination

This provision is applicable when work under the grant/cooperative agreement is performed in the U.S. or when employees are recruited in the U.S.

The Recipient agrees to comply with the non-discrimination requirements below:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.), which prohibits discrimination on the grounds of race, color, or national origin in any program or activity receiving federal financial assistance.

- Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.), which prohibits discrimination on the basis of sex in any education program or activity receiving federal financial assistance.
- Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability in any program or activity receiving federal financial assistance.
- The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), which prohibits discrimination on the basis of age in any program receiving federal financial assistance.
- The Americans with Disabilities Act of 1990 (42 U.S.C. §§ 12101 et seq.), which prohibits recipients from discriminating on the basis of disability in employment (Title I); State and local government services (Title II); and places of public accommodation and commercial facilities (Title III).
- Parts II and III of E.O. 11246, as amended by E.O. 11375, 11478, 12086, 12107, 13279, 13665, and 13672, which prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over \$10,000 in Government business in one year, from discriminating in employment decisions on the basis of race, color, religion, sex, or national origin and requires that government contractors take affirmative action to ensure that equal opportunity is provided in all aspects of their employment.
- E.O. 13166, "Improving Access to Services for Persons with Limited English Proficiency," which clarifies that national origin discrimination under Title VI includes discrimination on the basis of limited English proficiency (LEP) and requires that the recipient take reasonable steps to ensure that LEP persons have meaningful access to programs and activities.
- Any other applicable non-discrimination law(s).

Generally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq, provides that it shall be an unlawful employment practice for an employer to discharge any individual or otherwise to discriminate against an individual with respect to compensation, terms, conditions, or privileges of employment because of such individual's race, color, religion, sex, or national origin. However, Title VII, 42 U.S.C. § 2000e-1(a), expressly exempts from the prohibition against discrimination on the basis of religion, a religious corporation, association, educational institution, or society with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities.

Applicants must ensure that individuals selected as beneficiaries of support under this grant meet the legal requirements consistent with Supreme Court Decisions including *Fisher*, *Gratz*, and *Grutter*.

Modifications/Prior Approval

NRC's prior written approval may be required before a Recipient makes certain budget modifications or undertakes particular activities. If NRC approval is required for changes in the grant or cooperative agreement, it must be requested and obtained from the NRC Grants Officer in advance of the change or obligation of funds. All requests for NRC prior approval, including requests for extensions to the period of performance, must be made, in writing (which includes submission by e-mail), to the designated Grants Officer at least 30 days before the proposed

change. The request must be signed by the authorized organizational official. Failure to obtain prior approval, when required, from the NRC Grants Officer, may result in the disallowance of costs, or other enforcement action within NRC's authority.

Lobbying Restrictions

The Recipient will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328) which limits the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

The Recipient will comply with provisions of 31 U.S.C § 1352. This provision generally prohibits the use of Federal funds for lobbying in the Executive or Legislative Branches of the Federal Government in connection with the award, and requires disclosure of the use of non-Federal funds for lobbying.

The Recipient shall submit, at the time of application, a completed "Certification Regarding Lobbying" form, regardless of dollar value.

If applicable, the Recipient receiving in excess of \$100,000.00 in Federal funding shall submit a completed Standard Form (SF-LLL), "Disclosure of Lobbying Activities" for any persons engaged in lobbying activities, as discussed at 31 U.S. Code § 1352 – Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions. The form concerns the use of non-Federal funds for lobbying within 30 days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed. If the Recipient must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

Debarment And Suspension – (See [2 CFR Part 180](#); [2 CFR § 200.205](#); [2 CFR § 200.113](#); and [2 CFR Part 200, Appendix II.](#))

The Recipient agrees to notify the Grants Officer immediately upon learning that it or any of its principals:

- (1) Are presently excluded or disqualified from covered transactions by any Federal department or agency;
- (2) Have been convicted, within the preceding three-year period preceding this proposal, of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; commission of any other offense indicating a lack of business integrity or business honesty that seriously and directly affects the recipient's present responsibility;
- (3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b); or

(4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.

(5) The Recipient agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subaward or contracts under this grant/cooperative agreement with a person or entity that is not included on the System for Award Management (SAM) (<https://www.sam.gov>).

The Recipient further agrees to include the following provision in any subaward or contracts entered into under this award:

Debarment, Suspension, Ineligibility, and Voluntary Exclusion

The Recipient certifies that neither it nor its principals is presently excluded or disqualified from participation in this transaction by any Federal department or agency. The policies and procedures applicable to debarment, suspension, and ineligibility under NRC-financed transactions are set forth [2 CFR Part 180](#) and [2 CFR Part 200](#).

Drug-Free Workplace

The Recipient must be in compliance with The Federal Drug Free Workplace Act of 1988. The policies and procedures applicable to violations of these requirements are set forth in [41 U.S.C. §§ 8101-8106](#).

Implementation of E.O.13224 – Executive Order on Terrorist Financing

The Recipient is reminded that U.S. Executive Orders and U.S. law prohibits transactions with, and the provision of resources and support to, individuals and organizations associated with terrorism. It is the legal responsibility of the Recipient to ensure compliance with these Executive Orders and laws. This provision must be included in all contracts/sub-awards issued under this grant/cooperative agreement.

The Recipient must comply with E.O. 13224, Blocking Property and Prohibiting Transactions with Persons who Commit, Threaten to Commit, or Support Terrorism. Information about this Executive Order can be found at:

[Implementation of Executive Order 13224 Blocking Property and Prohibiting Transactions With Persons Who Commit, Threaten To Commit, or Support Terrorism amended by E.O. 13268, 13284, and 13372.](#)

Procurement Standards - 2 CFR §§ 200.318-200.326

Sections 200.318 - 200.326 set forth standards for use by Recipients in establishing procedures for the procurement of supplies and other expendable property, equipment, real property and other services with Federal funds. These standards are furnished to ensure that such materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders. No additional procurement standards or requirements will be imposed by the Federal awarding agencies upon Recipients, unless specifically required by Federal statute, executive order, or approved by OMB.

Travel and Transportation

Travel must be in accordance with the Recipient's Travel Regulations or the U.S. Government Travel Policy and Regulations at: <http://www.gsa.gov/portal/category/21222> and the per diem rates set forth at: <http://www.gsa.gov/portal/content/104877>, absent Recipient's travel regulations. Travel and transportation costs for the grant must be consistent with provisions as established in [2 CFR § 200.473-474](#).

All other travel, domestic or international, must not increase the total estimated award amount for the grant.

The Recipient will comply with the provisions of the Fly America Act (49 U.S.C 40118), as implemented at 41 CFR §§ 301-10.131 through 301-10.143.

Federal funds may not be used to travel to countries identified as "Foreign Policy Restricted Countries", as identified by the U.S. Department of State or the U.S. Agency for International Development.

Property Standards

Property standards of this award shall follow provisions as established [2 CFR §§ 200.310-200.316](#).

Intangible Property

Intangible and intellectual property of this award shall generally follow provisions established in [2 CFR § 200.315](#).

Inventions Report - The Bayh-Dole Act (P.L. 96-517) affords Recipients the right to elect and retain title to inventions they develop with funding under an NRC grant award ("subject inventions"). In accepting an award, the Recipient agrees to comply with applicable NRC policies, the Bayh-Dole Act, and its Government-wide implementing regulations found at Title 37, Code of Federal Regulations (CFR) Part 401. A significant part of the regulations require that the Recipient report all subject inventions to the awarding agency (NRC) as well as include an acknowledgement of federal support in any patents.

Patent Notification Procedures - If the NRC or its Recipients, without making a patent search, knows (or has demonstrable reasonable grounds to know) that technology covered by a valid United States patent has been or will be used without a license from the owner, E.O.12889 requires NRC to notify the owner. If the Recipient uses or has used patented technology under this award without license or permission from the owner, the Recipient must notify the Grants Officer. This notice does not imply that the Government authorizes and consents to any copyright or patent infringement occurring under the financial assistance.

Data, Databases, and Software - The rights to any work produced or purchased under a NRC federal financial assistance award, such as data, databases or software are determined by [Subpart D](#) of [2 CFR Part 200](#). The Recipient owns any work produced or purchased under a NRC federal financial assistance award subject to NRC's right to obtain, reproduce, publish or otherwise use the work or authorize others to receive, reproduce, publish or otherwise use the data for Government purposes.

Copyright - The Recipient may copyright any work produced under a NRC federal financial assistance award subject to NRC's royalty-free nonexclusive and irrevocable right to reproduce, publish or otherwise use the work or authorize others to do so for Government purposes. Works jointly authored by NRC and Recipient employees may be copyrighted, but only the part authored by the Recipient is protected because, under [17 U.S.C. § 105](#), works produced by Government employees are not copyrightable in the United States. On occasion, NRC may ask the Recipient to transfer to NRC its copyright in a particular work when NRC is undertaking the primary dissemination of the work. Ownership of copyright by the Government through assignment is permitted under [17 U.S.C. § 105](#).

Record Retention and Access

Recipient shall follow established provisions in [2 CFR §§ 200.333-337](#).

Conflict Of Interest

Conflict of Interest standards for this award will follow the Organizational Conflict of Interest (OCOI) requirements set forth in Section 170A of the Atomic Energy Act of 1954, as amended, and provisions set forth at [2 CFR § 200.112](#), Conflict of Interest.

Dispute Review Procedures

- a. Any request for review of a notice of termination or other adverse decision should be addressed to the Grants Officer. It must be postmarked or transmitted electronically no later than 30 days after the postmarked date of such termination or adverse decision from the Grants Officer.
- b. The request for review must contain a full statement of the Recipient's position and the pertinent facts and reasons in support of such position.
- c. The Grants Officer will promptly acknowledge receipt of the request for review and shall forward it to the Director, Office of Acquisition Management Division, unless otherwise delegated, who shall appoint an intra-agency Appeal Board to review a recipient appeal of an agency action, if required, which will consist of the program office director, the Deputy Director of Office of Administration, and the Office of General Counsel, or their designees.
- d. Pending resolution of the request for review, the NRC may withhold or defer payments under the award during the review proceedings.
- e. The review committee will request the Grants Officer who issued the notice of termination or adverse action to provide copies of all relevant background materials and documents. The committee may, at its discretion, invite representatives of the Recipient and the NRC program office to discuss pertinent issues and to submit such additional information as it deems appropriate. The chairman of the review committee will insure that all review activities or proceedings are adequately documented.
- f. Based on its review, the committee will prepare its recommendation to the Director, Office of Administration, who will advise the parties concerned of his/her decision.

Remedies for Noncompliance

Termination of this award will follow provisions as established and described above in “Dispute Review Process” in [2 CFR §§ 200.338-342](#).

Performance and Financial Monitoring and Reporting - 2 CFR §§ 200.327-329

Recipient Financial Management systems must comply with the provisions in [2 CFR § 200.302](#).

- Payment – [2 CFR § 200.305](#)
- Cost Share or Matching – [2 CFR § 200.306](#)
 - Recipients are to be careful with providing excessive cost share or match since at the end of the grant, if the identified match has not been provided, then a portion of the federal share may be required to be returned to the Government.
- Program Income – [2 CFR § 200.307](#)
 - Earned program income, if any, will be added to funds committed to the project by the NRC and Recipient and used to further eligible project or program objectives or be deducted from the total project cost for the grant, as directed by the Grants Officer or indicated in the terms and conditions of the award.
- Revision of Budget and Program Plans – [2 CFR § 200.308](#)
 - The Recipient is required to report deviations from the approved budget and program descriptions in accordance with – [2 CFR § 200.308\(b\)](#) and request prior written approval from the Project Officer and the Grants Officer.
 - The Recipient is not authorized to re-budget between direct costs and indirect costs without written prior approval of the Grants Officer.
 - The Recipient is authorized to transfer funds among direct cost categories up to a cumulative 10 percent of the total approved budget. The Recipient is not allowed to transfer funds if the transfer would cause any Federal appropriation to be used for purposes other than those consistent with the original intent of the appropriation.
 - Allowable Costs – [2 CFR §§ 200.403](#)
- See section [2 CFR §§ 200.330-332](#) for Subrecipient Monitoring and Management.

FEDERAL FINANCIAL REPORTS

Federal Financial Reports (SF-425) are semi-annually, for the periods ending March 31 and September 30. Reports are due within 30 calendar days following the end of the reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at:

Grants_FFR.Resource@nrc.gov. (NOTE: There is an underscore between Grants and FFR in the email address.) The SF-425 form and instructions are available at the following URL: http://www.whitehouse.gov/omb/grants_forms/.

PERFORMANCE PROGRESS REPORTS

The performance (technical) reports indicated below are subject to [2 CFR §200.328](#).

Faculty Development

Performance reports must be submitted semi-annually, for the periods ending March 31 and September 30, or any portion thereof, regardless of the award date. Reports are due within 30 days following the end of each reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_PPR.Resource@nrc.gov. (NOTE: *There is an underscore between Grants and PPR in the email address.*)

Final Reports - The Recipient is required to submit final reports, both Financial (SF-425) and Performance (SF-PPR, SF-PPR-B, SF-PPR-E) within 90 days of the grant expiration. In addition to these reports, a final SF-428, Tangible property report, is also required, if applicable. The final PPR (for Scholarship, Fellowship, and Trade School and Community College Scholarship awards) must include the names of all students with up to date contact information (mailing address, telephone/cell phone, email address). The reports must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_FFR.Resource@nrc.gov and Grants_PPR.Resource@nrc.gov. (NOTE: *There is an underscore between Grants and FFR and Grants and PPR in the email addresses.*)

For grant awards that are modified to add additional Program Descriptions, the recipient is required to address the applicable grant performance metrics associated with all programs. Further, these metrics should be broken out by individual program (e.g. Program A and Program B). This can be done utilizing Block 10, Performance Narrative, of the SF-PPR form. If this block does not have sufficient space, additional pages will be accepted. Sf-PPR-B and SF-PPR-E should be used to address both programs as well.

Period of Performance – 2 CFR § 200.309

The recipient may charge to the Federal award only allowable costs incurred during the period of performance and any costs incurred before the NRC or pass-through entity made the Federal award that was authorized by the NRC or pass through entity.

Unless otherwise authorized in [2 CFR Part 200](#) or by special award condition, any extension of the award period can only be authorized by the Grants Officer in writing. Assurances of funding from other than the Grants Officer shall not constitute authority to obligate funds for programmatic activities beyond the expiration date.

The NRC Grant Officer may authorize a no cost extension of the period of performance. The recipient must submit a no cost extension request no less than 30 days prior to the award end date. Any request for a no cost extension after the grant has expired will not be approved. However, the NRC has no obligation to provide any additional prospective or incremental funding. Any modification of the award to increase funding and/or to extend the period of performance is at the sole discretion of the NRC.

Automated Standard Application For Payments (ASAP) Procedures

Unless otherwise stated, Recipient payments are made using the Department of Treasury's Automated Standard Application for Payment (ASAP) system, ASAP.gov, through preauthorized electronic funds transfers. To receive payments, Recipients are required to enroll with the Department of Treasury, Financial Management Service, and Regional Financial Centers, which

allows them to use the on-line method of withdrawing funds from their ASAP established accounts. The following information is required to make ASAP withdrawals: (1) ASAP account number – the award number found on the cover sheet of the award; (2) Agency Location Code (ALC) – 31000001; and Region Code. Recipients enrolled in the ASAP system do not need to submit a “Request for Advance or Reimbursement” (SF-270).

II. Audit Requirements

Audits

Organization-wide or program-specific audits are performed in accordance with the Single Audit Act of 1996, as amended, and as implemented by [2 CFR Part 200, Subpart F—AUDIT REQUIREMENTS](#). Recipients are subject to the provisions of this subpart if they expend \$750,000 or more in a year in Federal awards. See [2 CFR 200.501](#).

The Form SF-SAC and the Single Audit Reporting packages for fiscal periods ending on or after January 1, 2008 are submitted online, as follows:

1. Create the recipient’s online report ID at:
<http://harvester.census.gov/fac/collect/ddeindex.html>;
2. Complete the Form SF-SAC;
3. Upload the Single Audit;
4. Certify the Submission; and
5. Click “Submit.”

Organizations expending less than \$750,000 a year are not required to have an annual audit for that year but must make their grant-related records available to NRC or other designated officials for review or audit.

III. Programmatic Requirements

The recipient is responsible for providing documentation to the NRC that tracks each student’s progress in achievement of the academic program for which federal funds were provided. This includes: (1) ensuring the service agreement is signed by the student prior to providing support; (2) providing the NRC with student contact information upon student entry into the program, upon completion or withdrawal from the program, and upon request by the NRC; and (3) monitoring the student’s fulfillment of the service agreement for the duration of the award. The NRC shall be notified immediately if a student is not fulfilling the academic program or the service agreement.

Grant Performance Metrics

The Office of Management and Budget requires all Federal Agencies providing funding for educational scholarships and fellowships as well as other educational related funding to report on specific metrics. These metrics are part of the Academic Competitiveness Council’s (ACC) 2007 report and specifically relates to Science, Technology, Engineering, and Mathematics (STEM) curricula.

As part of the OMB requirements indicated above (for metric reporting), the recipient shall address the following questions and submit responses with the required progress reports:

Faculty Development Metrics:

1. How many Faculty have been sponsored by NRC funding?
 - a. Response is the number of faculty sponsored, for this reporting period and cumulative to the grant.
2. How many items have the sponsored faculty produced, for example, Professional Journal articles, publications, patents, or conference reports?
 - a. Response is the type and number of items (not a bibliography), for this reporting period and cumulative to the grant.

Unsatisfactory Performance

Failure to perform the work in accordance with the terms of the award and maintain at least a satisfactory performance rating may result in designation of the Recipient as high risk and the assignment of special award conditions. Further action may be required as specified in the standard term and condition entitled "Remedies for Noncompliance."

Failure to comply with the award provisions may result in a negative impact on future NRC funding. In addition, the Grants Officer may withhold payments; change the method of payment from advance to reimbursement; impose special award conditions; suspend or terminate the grant.

Other Federal Awards With Similar Programmatic Activities

The Recipient will immediately notify the Project Officer and the Grants Officer in writing if after award, other financial assistance is received to support or fund any portion of the program description stated in the NRC award. NRC will not pay for costs that are funded by other sources.

Prohibition Against Assignment By The Recipient

The Recipient will not transfer, pledge, mortgage, or otherwise assign the award, or any interest to the award, or any claim arising under the award, to any party, banks, trust companies, or other financing or financial institutions without the written approval of the Grants Officer.

Site Visits

The NRC, through authorized representatives, has the right to make site visits to review project accomplishments and management control systems and to provide technical assistance as required. If any site visit is made by the NRC on the premises of the Recipient or contractor under an award, the Recipient shall provide and shall require his/her contractors to provide reasonable access to all facilities and provide necessary assistance for the safety and convenience of the Government representative in the performance of his/her official duties.

IV. Additional Requirements**Criminal and Prohibited Activities**

The Program Fraud Civil Remedies Act ([31 U.S.C. §§ 3801-3812](#)), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the Federal

government for money (including money representing grant/cooperative agreements, loans, or other benefits).

False statements ([18 U.S.C. § 287](#)), provides that whoever makes or presents any false, fictitious, or fraudulent statements, representations, or claims against the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided by 18 USC §287.

False Claims Act ([31 U.S.C. § 3729 et seq.](#)), provides that suits under this Act can be brought by the government, or a person on behalf of the government, for false claims under federal assistance programs.

Copeland “Anti-Kickback” Act ([18 U.S.C. § 874](#)), prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract.

American-Made Equipment and Products

Recipients are encouraged to purchase American-made equipment and products with funding provided under this award.

Increasing Seat Belt Use in the United States

E.O. 13043, amended by E.O. 13652, requires Recipients to encourage employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally-owned vehicle.

Federal Leadership of Reducing Text Messaging While Driving

E.O. 13513 requires Recipients to encourage employees, sub-awardees, and contractors to adopt and enforce policies that ban text messaging while driving company-owned, rented vehicles or privately owned vehicles when on official Government business or when performing any work for or on behalf of the Federal Government.

Federal Employee Expenses

Federal agencies are barred from accepting funds from a Recipient to pay transportation, travel, or other expenses for any Federal employee unless specifically approved in the terms of the award. Use of award funds (Federal or non-Federal) or the Recipient’s provision of in-kind goods or services, for the purposes of transportation, travel, or any other expenses for any Federal employee may raise appropriation augmentation issues. In addition, NRC policy prohibits the acceptance of gifts, including travel payments for Federal employees, from Recipients or applicants regardless of the source.

Minority Serving Institutions (MSIs) Initiative

Pursuant to E.O.s 13230 and 13270, [amended by E.O. 13316](#) and [13385](#), 13532, 13592, 13555, 13515, and 13621, NRC is strongly committed to broadening the participation of MSIs in its financial assistance program. NRC’s goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the Nation’s capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from Federal financial assistance programs. NRC encourages all applicants and Recipients to include meaningful participations of MSIs. Institutions eligible to be considered MSIs are listed

on the Department of Education website: <http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>

Research Misconduct

Scientific or research misconduct refers to the fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. It does not include honest errors or differences of opinions. The Recipient organization has the primary responsibility to investigate allegations and provide reports to the Federal Government. Funds expended on an activity that is determined to be invalid or unreliable because of scientific misconduct may result in a disallowance of costs for which the institution may be liable for repayment to the awarding agency. The Office of Science and Technology Policy at the White House published in the Federal Register on December 6, 2000, a final policy that addressed research misconduct. The policy was developed by the National Science and Technology Council ([65 FR 76260](#)). The NRC requires that any allegation be submitted to the Grants Officer, who will also notify the OIG of such allegation. Generally, the Recipient organization shall investigate the allegation and submit its findings to the Grants Officer. The NRC may accept the Recipient's findings or proceed with its own investigation. The Grants Officer shall inform the Recipient of the NRC's final determination.

Publications, Videos, and Acknowledgment of Sponsorship

Publication of the results or findings of a research project in appropriate professional journals and production of video or other media is encouraged as an important method of recording and reporting scientific information. It is also a constructive means to expand access to federally funded research. The Recipient is required to submit a copy to the NRC and when releasing information related to a funded project include a statement that the project or effort undertaken was or is sponsored by the NRC. The Recipient is also responsible for assuring that every publication of material (including Internet sites and videos) based on or developed under an award, except scientific articles or papers appearing in scientific, technical or professional journals, contains the following disclaimer:

“This **[report/video]** was prepared by **[Recipient name]** under award **[number]** from **[name of operating unit]**, Nuclear Regulatory Commission. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the view of the **[name of operating unit]** or the US Nuclear Regulatory Commission.”

Trafficking In Victims Protection Act Of 2000 (as amended by the Trafficking Victims Protection Reauthorization Act of 2003)

Section 106(g) of the Trafficking In Victims Protection Act Of 2000 (as amended as amended, directs on a government-wide basis that:

“...any grant, contract, or cooperative agreement provided or entered into by a Federal department or agency under which funds are to be provided to a private entity, in whole or in part, shall include a condition that authorizes the department or agency to terminate the grant, contract, or cooperative agreement, without penalty, if the recipient or any subrecipient, or the contractor or any subcontractor (i) engages in severe forms of trafficking in persons or has procured a commercial sex act during the period of time that the grant, contract, or cooperative agreement is in effect, or (ii) uses forced labor in the

performance of the grant, contract, or cooperative agreement.” (See 22 U.S.C. §7104(g).)

EXECUTIVE COMPENSATION REPORTING

2 CFR § 170.220 directs agencies to include the following text to each grant award to a non-federal entity if the total funding is \$25,000 or more in Federal funding.

Reporting Subawards and Executive Compensation.

a. Reporting of first-tier subawards.

1. *Applicability.* Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000.00 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111–5) for a subaward to an entity (see definitions in paragraph e. of this award term).

2. Where and when to report.

i. You must report each obligating action described in paragraph a.1. of this award term to <http://www.fsrs.gov>.

ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)

3. *What to report.* You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.

b. Reporting Total Compensation of Recipient Executives.

1. *Applicability and what to report.* You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if—

i. the total Federal funding authorized to date under this award is \$25,000.00 or more;

ii. in the preceding fiscal year, you received—

(A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR § 170.320](#) (and subawards); and

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR § 170.320](#) (and subawards); and

iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. *Where and when to report.* You must report executive total compensation described in paragraph b.1. of this award term:

i. As part of your registration profile at <http://www.sam.gov> .

ii. By the end of the month following the month in which this award is made, and annually thereafter.

c. *Reporting of Total Compensation of Subrecipient Executives.*

1. *Applicability and what to report.* Unless you are exempt as provided in paragraph d. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if—

i. in the subrecipient's preceding fiscal year, the subrecipient received—

(A) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR § 170.320](#) (and subawards); and

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and

ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. *Where and when to report.* You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

i. To the recipient.

ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (*i.e.*, between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.

d. *Exemptions*

If, in the previous tax year, you had gross income, from all sources, under \$300,000.00, you are exempt from the requirements to report:

i. Subawards,

and

ii. The total compensation of the five most highly compensated executives of any subrecipient.

e. *Definitions*. For purposes of this award term:

1. *Entity* means all of the following, as defined in 2 CFR Part 25:

i. A Governmental organization, which is a State, local government, or Indian tribe;

ii. A foreign public entity;

iii. A domestic or foreign nonprofit organization;

iv. A domestic or foreign for-profit organization;

v. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.

2. *Executive* means officers, managing partners, or any other employees in management positions.

3. *Subaward*:

i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.

ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. __ .210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations")

iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

4. *Subrecipient* means an entity that:

i. Receives a subaward from you (the recipient) under this award; and

ii. Is accountable to you for the use of the Federal funds provided by the subaward.

5. *Total compensation* means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see [17 CFR § 229.402\(c\)\(2\)](#)):

i. *Salary and bonus.*

ii. *Awards of stock, stock options, and stock appreciation rights.* Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.

iii. *Earnings for services under non-equity incentive plans.* This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.

iv. *Change in pension value.* This is the change in present value of defined benefit and actuarial pension plans.

v. *Above-market earnings on deferred compensation which is not tax-qualified.*

vi. Other compensation, if the aggregate value of all such other compensation (e.g., severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.00.