

Papahānaumokuākea Marine National Monument
RESEARCH Permit Application

NOTE: *This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).*

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.
- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.
- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Send Permit Applications to:

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
nwhipermit@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

Papahānaumokuākea Marine National Monument Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information

Applicant Name: Charles Littnan

Affiliation: National Marine Fisheries Service

Permit Category: Research

Proposed Activity Dates: June 1, 2010 - October 31, 2010

Proposed Method of Entry (Vessel/Plane): Vessel

Proposed Locations: Nihoa and Mokumanamana

Estimated number of individuals (including Applicant) to be covered under this permit:

12

Estimated number of days in the Monument: 36

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...
enhance our understanding of the population and foraging ecology of monk seals at two largely understudied subpopulations in the NWHI.

b.) To accomplish this activity we would
conduct a series of low impact surveys using standard monk seal assessment techniques to better understand population size and reproductive and survival rates. We would also investigate the potential to place a video system overlooking the main pupping beach at Nihoa to monitor the behavior, population trends, and disturbances to monk seals and the island. Lastly, we would suspend a video camera from a vessel to determine habitat types at foraging "hot spots" determined by previously satellite-tracked monk seals.

c.) This activity would help the Monument by ...
better understanding the apparently healthier populations of monk seals at Nihoa and Mokumanamana. More closely assessing the demographic trends and conditions and describing the foraging ecology of these seals, we may better understand the ecological factors that are contributing to the rapid decline of monk seals in the rest of the NWHI.

Other information or background:

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Littnan, Charles L.

Title: Lead Scientist, Hawaiian Monk Seal Research Program (HMSRP)

1a. Intended field Principal Investigator (See instructions for more information):

Charles L. Littnan

2. Mailing address (street/P.O. box, city, state, country, zip):

[REDACTED]

Phone: [REDACTED]

Fax:

Email: [REDACTED]

For students, major professor's name, telephone and email address: n/a

3. Affiliation (institution/agency/organization directly related to the proposed project):

Pacific Islands Fisheries Science Center, National Marine Fisheries Service, NOAA, Department of Commerce

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Research Diver; Jane Doe, Field Technician):

Chad Yoshinaga, Chief Scientist
Jessica Lopez, Biological Technician
Thea Johanos, Population Assessment Program Lead
Brenda Becker, Biologist
John Henderson, Biologist
Tenaya Norris, Biological Technician
Frances Gulland, Veterinarian
Angie Kaufman, Biological Technician
Others TBD

Section B: Project Information

5a. Project location(s):

<input checked="" type="checkbox"/> Nihoa Island	<input checked="" type="checkbox"/> Land-based	<u>Ocean Based</u>	
<input checked="" type="checkbox"/> Necker Island (Mokumanamana)	<input checked="" type="checkbox"/> Land-based	<input checked="" type="checkbox"/> Shallow water	<input checked="" type="checkbox"/> Deep water
<input type="checkbox"/> French Frigate Shoals	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Gardner Pinnacles	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Maro Reef			
<input type="checkbox"/> Laysan Island	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Lisianski Island, Neva Shoal	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Pearl and Hermes Atoll	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Midway Atoll	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Kure Atoll	<input type="checkbox"/> Land-based	<input type="checkbox"/> Shallow water	<input type="checkbox"/> Deep water
<input type="checkbox"/> Other			

NOTE: There is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:

Population Assessment Surveys: Surveys will be conducted along the shoreline and lava benches at both islands. There will be no reason to access the interior of the islands during population assessment surveys.

Video Camera Placement: All activities for surveying the potential site and placement of camera will be along the shoreline or rock ledges immediate adjacent to the sandy beach at Nihoa Island. There may be a need to access the interior of island if the camera is going to be a live satellite feed. If this is the case, we will request the presence of a USFWS escort.

Video Camera Surveys of Benthic Habitat: Surveys of habitat use will be conducted on the on the sea mount surrounding Nihoa Island and on the sea mount immediately to the west. Actual locations that will be surveyed are still being determined since we are still collecting data from active satellite tags. A more detailed survey map will be provided before any activity takes place.

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

- Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource
- Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
- Anchoring a vessel
- Deserting a vessel aground, at anchor, or adrift

- Discharging or depositing any material or matter into the Monument
- Touching coral, living or dead
- Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument
- Attracting any living Monument resource
- Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
- Subsistence fishing (State waters only)
- Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6 Purpose/Need/Scope *State purpose of proposed activities:*

The total abundance of Hawaiian monk seals in the Northwestern Hawaiian Islands (NWHI), has declined by 70 % since the late 1950s. Since then, the six main sub-populations have experienced everything from periods of promising growth to catastrophic setbacks. The causes of decline have varied over time and from place to place, but since the early 1990s the decline has been driven, in large part, by poor juvenile survival. Many of these young animals have failed to thrive, and only about 1 of every 5 live to reach maturity, a situation largely due to insufficient food availability. The age structure of the population is therefore now unfavorable for future growth and the total population will inevitably fall below 1,000 individuals in just a few years.

To date, the islands of Nihoa and Mokumanamana have remained largely unstudied due to the difficulty of accessing the sites, limited ship resources, and the relatively small number of seals. Data that have been collected over the years indicates that monk seals at these two sites may have higher survival rates and be in better condition than seals at the six main sub-populations in the NWHI. More importantly, there are indications that these two populations may be experiencing growth. As these populations potentially become more important for the overall monk seal population it is important to establish baseline demographic parameters for the population and answer rather basic questions such as: Is population growth occurring? Is survival higher? Is growth due to immigration or intrinsic factors? What are the sources of mortality? Does survival vary between years? Until we are able to identify individuals and monitor the population more regularly, we will be unable to adequately answer these and more questions.

Furthermore, these sites could play a critical role in future plans to enhance survival of young seals and contribute to the potential recovery of the species. Currently scientists and managers, working together, are developing the means to improve juvenile survival. History teaches us that the monk seal will continue to face new and unforeseen challenges in the future, but after two decades of poor juvenile survival, it is clear that this problem must be addressed. Improving juvenile survival is one of four key activities highlighted in the new Recovery Plan for the Hawaiian monk seal, published by NOAA in the summer of 2007. One tool being developed is the translocation of young seals from an area of low survival to one of high survival. Over the past two years, a pilot study was conducted moving 12 weaned seals from French Frigate Shoals to Nihoa Island. The results are still pending but initial findings indicate that relocated seals had at least 2.5 times greater likelihood of survival than seals left at French Frigate Shoals. However, without better knowledge of demographic rates and trends at these locations, the HMSRP has halted the continued translocation of seals. The work proposed here will allow us to determine what number of seals these two islands may be able to absorb to help sustain the population of monk seals in the NWHI.

7. Answer the Findings below by providing information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Monument:

The Findings are as follows:

a. How can the activity be conducted with adequate safeguards for the cultural, natural and historic resources and ecological integrity of the Monument?

The goal of the work described here is to monitor a Monument natural resource and, ultimately, assist in the recovery of the Hawaiian monk seal, both of which are consistent with Monument mandates. The research proposed herein is compatible with the conservation and management goals of the Monument and minimizes disturbance to the NWHI ecosystem.

Our studies will be designed and executed so as to minimize impacts to the terrestrial and marine environment. For instance, on-island time will be limited to that required for survey work and animal capture for flipper tagging, during which all personnel will adhere to strict quarantine protocols as defined by USFWS. Movements will be confined to the immediate beach area to avoid potential disturbance to bird and plant life on the island interiors. After an adequate monitoring period, NMFS monk seal researchers will arrange to return to the NOAA R/V Oscar Elton Sette or other vessel, thereby reducing any human disturbance to terrestrial habitats and species by returning early. There will be no camping on either island.

Native Hawaiians share a close link to the ocean, marine life, and islands within the monument and seek to maintain the living cultural resources found there. Hawaiian monk seals are one of the most threatened of these cultural and natural legacies. The work presented here is important for the survival of this species into the future, and it is our intent to continue this work with respect and in partnership with the Native Hawaiian community. Accordingly, all scientists participating on these cruises will receive a Native Hawaiian cultural briefing before departure to the NWHI. In addition, the primary permittee, chief scientist, and other appropriate personnel look forward to consulting with the Office of Hawaiian Affairs (OHA) and the Monument's Native Hawaiian program coordinator on proper conduct while in the NWHI, on cultural sensitivities associated with the proposed activities and locations, and on the applicability of the results of this research to the role of OHA as one of the NWHI stakeholder agencies. The monk seal program has already conducted a Sec 106 analysis to ensure that the activities being carried out on Nihoa are not a threat to the important and fragile cultural sites on the island. We intend to undergo a similar analysis for our work on Mokumanu.

Lastly, the monk seal program has dedicated itself to providing a position for a cultural practitioner on field teams when conducting these research trips. We believe it is a great opportunity for information exchange and sharing between science and traditional knowledge and we enjoy providing transport to these important sites that practitioners may not normally be able to visit. We do this out a desire for partnership not as a requirement for our permit.

b. How will the activity be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument cultural, natural and historic resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects?

Please see 7a.

c. Is there a practicable alternative to conducting the activity within the Monument? If not, explain why your activities must be conducted in the Monument.

No. We can only learn about these two subpopulations by studying them directly.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?

The benefit of working on monk seals is that it focuses almost all of work to the shoreline area which buffers most of the natural and historic resources from impacts related to our presence. The results of this work will provide insights that will allow us to make better informed decisions related to conservation of this species. Furthermore, the potential gain from this project could lead to tools to increase survival of juvenile monk seals in the rapidly dwindling NWHI population.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.

All activities here are devised in a manner to minimize time in the field. Researchers will remain in the field for only the time necessary to handle and survey seals to a degree that ensures the success of the studies and actions proposed here.

Devices/cameras described within this permit application are designed and utilized in a what that minimizes impacts to the habitats they are used in.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

The Hawaiian Monk Seal Research Program has been conducting research on this species for over two decades. All members participating on these studies have previous monk seal experience and most have worked within the NWHI before. The protocols and research plans presented for these studies have been reviewed and approved by a variety of experts including the Marine Mammal Commission, Hawaiian Monk Seal Recovery Team, as well as other external specialists.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

All research/enhancement activities are supported by NOAA Fisheries funding and primarily with the use of NOAA research vessels.

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.

All participating staff are educated and trained to respect all cultural, natural and historic resources in the Monument. Our first and primary objective is "Do no harm". See section 7a above for details.

i. Has your vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

Yes

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

There are no factors, such as other permit violations, that should prevent the issuance of this permit. All activities are inline with Hawaiian Monk Seal Recovery Plan and relevant sections of the Monument Management Plan.

8. Procedures/Methods:

Population Assessment

Procedures to be followed during monk seal population monitoring will be almost identical to those detailed in the "2007 Field Manual for Research on the Hawaiian Monk Seal", a copy of which was provided to the Monument in early 2007. Nonetheless, a brief overview of procedures will be presented here.

Field personnel will observe monk seals on island, collecting a suite of data items including size, sex, condition, identity information (tags, bleach marks, scars), molt/reproductive status, factors affecting survival, photographs, and association with other seals. All weaned pups will be measured and tagged, and tags will be replaced in some older seals. Temporary bleach marks will be applied to seals to facilitate identification and total enumeration of the population. Seals entangled in marine debris will be disentangled when it is safe (for personnel). Necropsies will be conducted on any dead seals, and a suite of tissue samples collected. Personnel will remove from the beach and store in a secure location (to be picked up at a later date) all marine debris found on the beach which is capable of entangling monk seals. Pups which have been exchanged between mothers which are at highly disparate times of their lactation period will be 're-exchanged' by field personnel, by hand. Pups which have been abandoned by their mother will be united by hand with a potential foster mother (a female who has concurrently lost her pup).

Part of this monitoring may be done with a video camera placed at one end of the main breeding beach on Nihoa Island. The systems are described below. Monitoring the beach with an archival video system will allow the HMSRP to determine total number of pups born, identify individuals, monitor disturbance to the seals, estimate seasonal fluctuations in abundance, and other factors. The camera system would also provide "virtual visits" to the island for Native Hawaiians and allow the public to see many of the Monuments natural wonders. Lastly, it could potentially help managers and enforcement agencies monitor for illegal access to the island.

Benthic Habitat Assessment

The Hawaiian Monk Seal Research Program has been satellite tracking translocated and resident seals at Nihoa for the past two years. It is estimated that the last satellite tags deployed in September should stop transmitting in the February or March. At that time, we will analyze

foraging locations around Nihoa to determine areas repeatedly visited by individuals, or so called "hotspots". During subsequent trips to Nihoa, we plan to suspend a video camera via a high-tensile cable to record images of the bottom. We will also randomly select locations that aren't hotspots to do similar camera drops. This will allow us to determine if 1) all monk seals are utilizing similar habitats, 2) if certain habitats are preferred over others, and 3) if there is more habitat available for a larger population of monk seals to utilize. This will be important for considerations of carrying capacity for Nihoa Island.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:
Hawaiian monk seal

Scientific name:
Monachus schauinslandi

& size of specimens:
80 (2 per individual) skin plugs from flipper tagging of pups

40 measurements of length and girth (1 per weaned pup)

200 fecal samples collected on beach for diet analysis

If a seal is found dead and in reasonable condition, a full necropsy will be conducted. The skull and small subsamples of each major organ and blubber will be collected.

Collection location:
Shoreline areas of the islands of Nihoa and Mokumanamana

Whole Organism Partial Organism

9b. What will be done with the specimens after the project has ended?

Samples will be analyzed in a timely basis upon return to Honolulu. All samples collected and not analyzed during this project (i.e. skin for genetics) will be stored at the PIFSC or Bishop Museum for future analysis.

9c. Will the organisms be kept alive after collection? Yes No

• General site/location for collections:

• Is it an open or closed system? Open Closed
n/a

• Is there an outfall? Yes No
n/a

• Will these organisms be housed with other organisms? If so, what are the other organisms?
n/a

• Will organisms be released?
n/a

10. If applicable, how will the collected samples or specimens be transported out of the Monument?

All samples collected within the monument will be transported out on the NOAA/RV OES or other vessel. If collected during a necropsy blubber and other tissue samples will be stored in a liquid nitrogen dewar. Most tissues will be stored in ethanol. Skin plugs from monk seals and cetaceans may be stored in DMSO prior to freezing. Fecal samples are stored in buckets and later frozen on the vessel.

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

Currently NOAA Fisheries is the only group researching Hawaiian monk seals eliminating duplicative research. However, we have several partners aiding us in the analysis of our samples and data. These include: Bishop Museum, Moss Landing Marine Lab, University of Hawaii Manoa and Hilo, UH Hawaii Institute of Marine Biology, Southwest Fisheries Science Center, Scripps Institute of Oceanography and Dalhousie University, Canada.

Data collected during this study will also be provided to the Monument to aid with their management objectives.

12a. List all specialized gear and materials to be used in this activity:

Nihoa Video Camera:

We are currently exploring two systems for the video camera and determining what it would take to for a system that could feed real time to monk seal researchers and Monument managers vs. one that would archive data for periodic downloads.

The first system would be similar to the camera used for shark monitoring at French Frigate Shoals. The camera system, custom-built by Sun Surveillance Systems, will record time-lapse video. The all-weather, portable camera system is would be designed for year-round deployment. On top of the battery housing are up to two cameras. One camera is a Motobix all-weather fixed camera and the other is a Sony pan/tilt/zoom programmable camera that is encased in spherically-shaped weather-proof housing.

The second system is produced by Seemore Wildlife (<http://www.seemorewildlife.com/>) and would be similar to the turtle camera set up at East Island, FFS.

Though the specific location has yet to be selected, there are several rock ledges that could provide a large enough area for the base station (power supply, recording equipment) with the camera mounted on top. It is possible that the camera can be placed without anchoring equipment into the stone. However, a dedicated site survey with an engineer, biologist and archaeologist is recommended by the program. With placement of the camera up against the cliff face and with no guy-wires the system should be no threat to birds in flight.

If the system can be set up for remote viewing it will provide an opportunity for resource managers, scientists, Native Hawaiians, and the general public to observe this extraordinary site. All camera functions, including pan, tilt, zoom, and audio capabilities, can be remotely controlled with web browser software. We could potentially set up an additional camera (on top of existing planned system without increasing the total footprint) that could be dedicated to external use and achieve part of the Monuments goal to the bring PMNM to the public.

Benthic Habitat Survey:

For Shallow Surveys (< 30 m) we will be using the SplashCam Deep Blue Pro.

Camera Specifications

Focus: Fixed 1 inch to focal infinity

Auxiliary Lighting: High Intensity LED

Resolution: 520 TV Lines

CCD: 1/3" Sony Super HAD II

Pixel Array 768(H)X 494(V)

Focus: 1.5" to Focal Infinity

Lens: 3.6mm

Iris: Electronic

Operating Temp: -10 to 55C

Light Sensitivity: 0.1 lux

Input Voltage: 12 volts DC

Current Draw: 90 mA

Physical Specifications Body Construction: Anodized Cast Aluminum

Exterior Finish: Thermoplastic Paint
Camera Weight: 1.2lbs water / 2lbs air (Dive weight can be added)
Depth Rating: 800ft standard / 2000ft with upgrade
Cable Strength: 700lbs break strength / 250lbs nominal work load
Available Cable Lengths: 50-1000ft in 50ft. increments
Dimensions: 3" Dia. / 3.5" Length
Weight with 50ft Cable: 10lbs

For Depths >30 m and <200 m we will use a camera deployed via a winch. The camera will likely be JW Fisher TOV-1 Camera System: <http://www.jwfishers.com/tov1.htm>

12b. List all Hazardous Materials you propose to take to and use within the Monument:
Hazardous Chemicals

MSDS for all chemicals will be provided if necessary

HAZMAT

MEDICAL/SAMPLE STORAGE

500 mL DMSO
1 L Ethanol
5 L Liquid Nitrogen
1 L 10% Formalin

FLAMMABLES

Boating
1 Corrosion Block
1 Epoxy Cement
1 EZ Store Fuel Stabilizer
1 Boat Oil
1 Gas, 55 gal drum
1 Grease, Silicon
1 Marine Sealant / Silicon Sealer
1 Marine Tex
1 Permatex
1 Resin
1 Silicone Lubricant
1 WD-40/LPS

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:

See above in Special Equipment

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:

Tissue samples will be analyzed at different times. Feces, blubber and other tissues used for diet analysis will be processed and logged within one month of return to Honolulu. They will then be distributed to the appropriate lab for analysis. Other samples should be analyzed within 6 months of collection depending on the workload of partner and contract laboratories. An important point to emphasize is that we do have partners in place to analyze samples and interpret resulting data.

15. List all Applicants' publications directly related to the proposed project:

A list of HMSRP publications can be provided if necessary. For additional background information, and an extensive bibliography, please see the Recovery Plan for the Hawaiian Monk Seal (www.nmfs.noaa.gov/pr/pdfs/recovery/hawaiianmonkseal.pdf).

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct. I agree that the Co-Trustees may post this application in its entirety on the Internet. I understand that the Co-Trustees will consider deleting all information that I have identified as “confidential” prior to posting the application.

Signature

Date

SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

- Applicant CV/Resume/Biography
- Intended field Principal Investigator CV/Resume/Biography
- Electronic and Hard Copy of Application with Signature
- Statement of information you wish to be kept confidential
- Material Safety Data Sheets for Hazardous Materials