#1	CONTACT INFORMATION:

Procedure Title	**Synthesis of Boron nanoparticles.**
Procedure Author	**Eyrusalam Bedasso**
Date of Creation/Revision	**1/24/2014**
Name of Responsible Person	**Prof. Hosmane**
Location of Procedure	**FR 301 and FR 304**
Approval Signature	*(If required. See section #9of this template)*

#2	THIS STANDARD OPERATING PROCEDURE (SOP) IS FOR A:

X☐ Specific laboratory procedure or experiment
Examples: synthesis of chemiluminescent esters, folate functionalization of polymeric micelles, etc.

☐ Generic laboratory procedure that covers several chemicals
Examples: distillation, chromatography, etc.

☐ Generic use of specific chemical or class of chemicals with similar hazards
Examples: organic azides, mineral acids, etc.

#3	PROCESS OR EXPERIMENT DESCRIPTION

1, Synthesis of boron nanoparticles

Frequency:	☐ one time ☐ daily ☐ weekly ☐ monthly X ☐ other: 3 or 4 times a week
Duration per Expt:	_____ minutes; or 5-8 hours

#4	SAFETY LITERATURE REVIEW & HAZARD SUMMARY

1. Decaborane -Flammable solid, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Irritant. Personal protective equipment (PPE)- gloves, safety glasses, lab coat.
2. Ethyl acetate- highly flammable liquid, causes serious eye irritation, may cause drowsiness or dizziness. Personal protective equipment (PPE)- gloves, safety glasses, lab coat.

#5	STORAGE REQUIREMENTS

1, Decaborane - Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition. Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

2, Ethyl acetate- Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

#6	STEP-BY-STEP OPERATING PROCEDURE

Boron nanoparticles are synthesized using the following procedure reaction.

1, 6.37×10^{-3} mol (0.7781 g) of decaborane is placed into a three neck round bottom flask, which is connected to the quartz tube that is placed inside a furnace.
2, The furnace was heated at 700^{o}C, once the furnace reached the intended temperature the flask was heated at 110^{o}C to sublime decaborane. The sublimed decaborane was carried into the quartz tube by carrier gas (N_2) with a flow rate of 0.22 L/min. and let to decompose for 6 hrs.
3, After the reaction was done furnace is turned off and cooled to room temperature. The product was collected from the wall of the quartz tube and washed with ethyl acetate 6 times coupled with centrifugation.
4, The final product is dried under vacuum for 8 hrs.
5, Clean up work area and lab equipment.
   1, Rinse all used glasswares with ethyl acetate
   2, wash with soap and water
   3, Rise the clean glasswares with acetone and dry using the oven
6, Remove PPE and wash hands.

Steps to include in your procedure:
1. Don personal protective equipment. ☐ appropriate street clothing (long pants, close-toed shoes) X☐ gloves; indicate type:__Nitrile X☐ safety goggles X☐ safety glasses ☐ face shield X☐ lab coats ☐ other:_____
2. Check the location and accessibility of the safety equipment that serves your lab: **ITEM** — **STATUS** Laboratory Fume Hood/Glove Box or other Ventilation Control — Location: FR 301 and FR 304 Eyewash/Safety Shower — Location: FR 301 and FR 304

#7	**WASTE DISPOSAL**

- All waste goes to organic waste container

#8	**TRAINING REQUIREMENTS**

General Training *(check all that apply):*

X☐General Safety & Emergency Preparedness

☐Chemical Safety for Laboratories

☐Radiation Safety

☐Biosafety training

☐Other:_____

Depending on the hazardous materials and processes you will be working with in this SOP, additional safety training may be required by NIU. *[PRECEDING GUIDANCE TEXT MAY BE DELETED]*

Location Where Records Maintained:	FR 301 Front Desk

Laboratory-specific training *(check all that apply):*

X☐ Review of SDS for other chemicals involved in process/experiment

☐ Review of this SOP

☐Other:_____

Location Where Records Maintained:	FR 301 Front Desk

#9	**PRIOR APPROVALS**