

## 2017 Program for Tokyo Institute Technology and Tohoku University

Tokyo Tech. 12 students + Prof. Yokokura + Prof. Hara = Total 14

Tohoku U.(A) 14(13+1) students + Prof. Kasukabe = Total 15

Tohoku U.(B) 10 (9+1)students + two instructors = Total 19 (only for the week of Feb 27, including FHL trip)

### **Feb 20 (M) President day: University Holiday**

Tokyo Institute of Technology /Tohoku University

Arrive/Hotel check-in/Free time in the afternoon

**Feb 21 (T)** AM: 8:00 Brief introduction (Prof. Ohuchi)

8:15 Lecture (Prof. Tsutsui)

9:45 Self-introduction (3 min PPT x 25=75 min)

(Place: 'Adler 107' <https://www.hfs.washington.edu/alder107/#gsc.tab=0>)

Also see attachment

Lunch 11:30

PM: 12:30 Roberts Hall Parking C-12 area for Boeing/Microsoft tour

2:00 Future of Flight Aviation Center & Being Tour in Everett, WA

<http://www.boeing.com/boeing/commercial/tours/index.page>

4:30 Microsoft visitor center (open till 7:00pm)

<https://www.microsoft.com/en-us/visitorcenter/>

(Transportation: A & A Limousine & Bus Service)

### **Feb 22 (W) Auditing lectures (with your choice)**

Time	Location	Lecture
8:30-9:20	<u>SIG 134</u>	MSE 170 Fundamental of Mat Sci and Eng (Prof. Hinds)
9:30-10:20	<u>MUE 153</u>	MSE 322 Kinetic Microstructure Evolution (Prof. Brush)
9:00-10:20	<u>EEB 037</u>	MSE 560 Organic Electronic/Photonic Materials (Prof. Luscombe)
10:30-11:20	<u>MGH 231</u>	MSE 351 Electronic Properties of Materials (Prof. Ohuchi)
10:30-11:20	<u>MUE 153</u>	MSE 431 Failure Analysis (Prof. Arola)
10:30-11:20	<u>MGH242</u>	EE 205 Intro Signal Conditions (Prof. Smith)
11:30-12:20	<u>MUE 153</u>	MSE 342 Materials Processing-I (Prof. Sarikaya)
11:30-12:30	<u>EEB 054</u>	MSE 452 Properties of Materials-II (Prof. Cao)
12:30-1:20	<u>LOW216</u>	ME 450 Intro Composite Materials (Prof. Tuttle)
12:30-1:20	<u>MEB 242</u>	ME 557 Experimental Stress Analysis (Prof. Wang)
12:30-1:20	<u>BNS 115</u>	CHEM E 560 Reactions at Surface (Prof. Stuve)
12:30-1:20	<u>PAA A 114</u>	PHYS 429 Biophysics (Prof. Marcel)

Those who wish to take different classes should look at the class offering list from web site: <http://www.washington.edu/students/crsct/>.

1. Choose appropriate School or College of your interest
2. Pick Department of your interest from 1.
3. From the selected department, click tab on **Winter Quarter 2017**
4. **Winter Quarter 2017 Time Schedule** will be appeared, so you look through courses, and pick one of your interest.
5. Identify name of the instructor, and ask him/her to get permission for auditing the class. Please do this process by yourself.

1:00-5:00 Professional career forum  
 Career seminar-1 Gail Cornelius, Director of UW-COE Career Center  
 Career seminar-2 Prof. Ohuchi (Materials Science and Engineering)  
 Career panel discussion: Invite Japanese students currently enrolling in UW PhD program

(Place: 'Adler 107' <https://www.hfs.washington.edu/alder107/#gsc.tab=0>)

**Feb 23 (Th)** 9:00-12:00 Lab visit, Research Center visit, discussion with students  
 Tour TA arrangement : 4 TAs

1:30-4:30 Research seminar-1 Prof. Sarikaya  
 Research seminar-2 Prof. Xu  
 See abstracts below

(Place: 'Adler 107' <https://www.hfs.washington.edu/alder107/#gsc.tab=0>)

**Feb 24 (F)** Auditing lectures (with your choice)

Time	Location	Lecture
8:30-9:20	<u>SIG 134</u>	MSE 170 Fundamental of Mat Sci and Eng (Prof. Hinds)
9:30-10:20	<u>MUE 153</u>	MSE 322 Kinetic Microstructure Evolution (Prof. Brush)
9:00-10:20	<u>EEB 037</u>	MSE 560 Organic Electronic/Photonic Materials (Prof. Luscombe)
10:30-11:20	<u>MGH 231</u>	MSE 351 Electronic Properties of Materials (Prof. Ohuchi)
10:30-11:20	<u>MUE 153</u>	MSE 431 Failure Analysis (Prof. Arola)
10:30-11:20	<u>MGH242</u>	EE 205 Intro Signal Conditions (Prof. Smith)
11:30-12:20	<u>MUE 153</u>	MSE 342 Materials Processing-I (Prof. Sarikaya)
11:30-12:30	<u>EEB 054</u>	MSE 452 Properties of Materials-II (Prof. Cao)
12:30-1:20	<u>LOW216</u>	ME 450 Intro Composite Materials (Prof. Tuttle)
12:30-1:20	<u>MEB 242</u>	ME 557 Experimental Stress Analysis (Prof. Wang)
12:30-1:20	<u>BNS 115</u>	CHEM E 560 Reactions at Surface (Prof. Stuve)
12:30-1:20	<u>PAA A 114</u>	PHYS 429 Biophysics (Prof. Marcel)

2:00 Football Stadium tour (Alaska Airlines Arena by the Husky Team Shop)  
 See map attached

3:00 Shopping at the Husky Authentic Team Shop

3:30 BBQ MSE Court Yard (Meet our students)

**Feb 25 (Sat)** Free time (morning)

2:00 Basketball Women's basketball vs Utah @Alaska Airline Arena  
 See information attached

Private reception at Prof. Ohuchi's residence in Bellevue.

9421 NE 1<sup>st</sup> Street, Bellevue, WA 98004 (See Map and Bus schedule attached)

House opens after 5:00pm 先週の大雨で地階が水漏れし、修理のため今年のレセプションは残念ですが中止です。

**Feb 26 (Sun)** Tokyo-Tech party leaves back to Japan

**Feb 27 (Mon)**

**Tohoku (A)** Auditing lectures/Seminars (with your choice)

Time	Location	Lecture
12:30-1:20	<u>MEB 127</u>	ME 557 Experimental Stress Analysis (Prof. Wang)
12:30-1:20	<u>BNS 115</u>	CHEM E 560 Reactions at Surface (Prof. Stuve)
1:30-2:50	<u>CMU 230</u>	MSE 541 Defects in Materials (Prof. Yang)
4:00-5:00	<u>MUE 153</u>	MSE 520 MSE Graduate seminar
4:00-5:00	<u>PAA-A110</u>	CHEM E ChemE Graduate seminar
3:30-5:20	<u>PAA A102</u>	PHYS 580 Physics Colloquium
3:30-4:50	<u>EEB 045</u>	MSE 582 Biomaterials and Tissue Engineering
4:00-5:00	<u>LOEW 216</u>	AE 598 Aerospace Engineering Colloquium

This may be changed. Will inform.

Individual activity

**Tohoku (B)**

8:15	Brief Introduction (Prof. Ohuchi)
8:30	3 min-self introduction (2 min response)
10:00	Lecture by Prof. Tsutsui

**Location Wilcox 243**

Afternoon Attending class/seminar as indicated above  
Individual contact to research laboratories

After Feb 28: Tohoku-U(B) group joins to U(A) group.

**Feb 28 (Tues)** Friday Harbor Lab Field Trip (day-1)

**See map.**

**Transportation Beeline Service(from UW to Anacortes)**

7:45	Bus departure from UW to Anacortes
10:30	Ferry departure from Anacortes to Friday Harbor Lunch in FH
2:00	FH Lab housing registration/check-in
2:30	R/V Centennial marine lab experience

**See information attached below**

March 1 (Wed) Friday Harbor Lab Field Trip (day-2)

9:00	Prof. Billie Swalla, Director of FHL and Prof. of Biology
10:30	FHL tour
1:00	Student presentation and tutoring: Session #1 (limit to 5 hours)
Dinner : Eat out in FH down town	

March 2 (Thursday) Friday Harbor Lab Field Trip (day-3)

9:00	Student presentation and tutoring: Session #2 (limit to 2 hours)
12:10	Ferry departure from Friday Harbor to Anacortes
2:30	Bus departure from Anacortes to UW to SeaTac Airport hotel

**Transportation Beeline Service(from Anacortes to SeaTac Airport through UW))**

March 3 (Friday) 9:00-13:00 Wrap-up Presentation  
Closing ceremony

Location: Adler 107

March 4 (Saturday) Tohoku party leaves back to Japan



## Alder Commons Meeting Room 107

Alder Hall: 1310 NE 40th Street Seattle, WA 98105. Entrance on NE 40th Street between Brooklyn Avenue NE and University Way NE

**Room Type:** Meeting room/classroom

**Capacity:** 52 (standard classroom set), 78 max

**Seating:** Flexible room set with tables and chairs

**Media Equipment:** Projector, screen, speakers, laptop hookup

**Features:** Whiteboard walls, tack walls, outlets in floor

**Wi-Fi:** Yes

**Wheelchair Accessible:** Yes

**Catering Available:** Yes

### Other

Available to UW residence hall students and escorted guests when not reserved for an event.

- Catering is available exclusively through UW's Bay Laurel Catering, which offers a variety of quality culinary options from boxed lunches to banquets.

Special room sets are available and may entail an additional cost.

# Molecular Biomimetics - Genetically Designed Devices

Mehmet Sarikaya

Professor of Materials Sci. & Eng., Chem Engineering and Oral Health Sciences

GEMSEC, Genetically Engineered Materials Science and Engineering Center

University of Washington, Seattle, WA 98195, USA

sarikaya@uw.edu; <http://www.GEMSEC.washington.edu>

## ABSTRACT

Predictably interfacing biological molecules with solids is the key for drug delivery, enzyme immobilization, biofunctionalization of implants, and signal transduction in bio- and chemical-sensors. Highly specific interactions controlled by proteins enable explicit recognition of minerals and formation of intricate supramolecular architectures in nature. Mimicking natural proteins, engineered short polypeptides have become ubiquitous molecular tools in addressable functionalization of solid interfaces towards technological applications, beyond medicine. Simplicity of peptide sequences and functional domains offer latent means for tailoring and interrogating intermolecular forces through rational mutations. Direct experimental observation of interaction of peptides with solids requires well-defined surfaces, e.g., atomic-scale topography, crystal structure, or surface chemistry, kept persistent under biological conditions. These requirements are realized with metals (Au), 2D solids, e.g., graphene and layered dichalcogenides, and Quartz. Using designed or biocombinatorially selected peptides, we demonstrate control of molecular interactions on surfaces leading to organized architectures, used in electronic and photonic technological implementations as well as in medicine, e.g., in inorganic solid synthesis (e.g., nanoparticles and thin films), in FET devices, LEDs, photonic crystals, tissue repair, and biomimetic PVs, all under biologically viable conditions of water, pH7, room temperature, and atmospheric condition encompassing many of the developments in materials fabrication during the last 2 decades. Funded by USA-ARO, NSF-DMR BioMat., MRSEC, DMR-MGI NIH-NIDCR & NCI, JAPAN JST PRESTO.



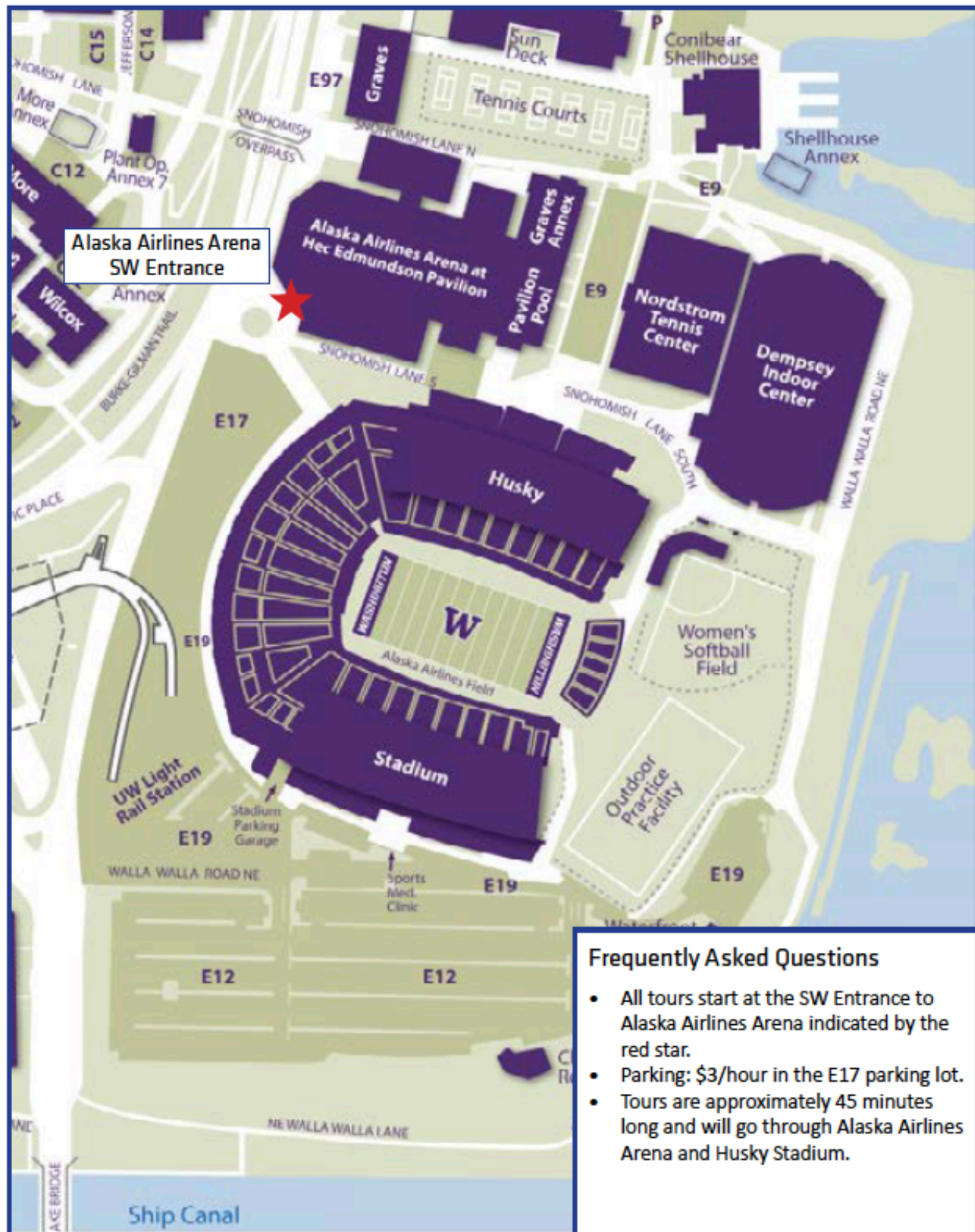
**Title: Optoelectronics of 2D Transition Metal Dichalcogenides**  
**Professor Xiaodong Xu**  
**Department of Physics**  
**Department of Materials Science and Engineering**

**Abstract:**

Two dimensional transition metal dichalcogenides are a recent addition to the 2D electronic materials family. They have shown outstanding electrical and optical properties for new optoelectronic device concepts. In this talk, we will first discuss the unique interplay between spin, valley, and layer pseudospins in bilayer WSe<sub>2</sub>. Such coupling effects lead to electrical control of spin states and optical generation of valley coherence through interlayer trions, where electrons and holes are localized in different layers. We will then talk about optoelectronic devices based on monolayer WSe<sub>2</sub>, such as p-n junctions as light emitting diodes. We will conclude the talk with a discussion of the optoelectronic properties of both vertical and lateral MoSe<sub>2</sub>-WSe<sub>2</sub> heterostructures.



# UW Athletics Tour Information







Utah

SAT., FEB 25  
2:00 PM PST  
PAC-12 NETWORKS

10  
Washington 

Alaska Airlines Arena at Hec Edmundson Pavilion

Seattle, WA


Tickets Live Stats

Women's Basketball

WATCH 2/25 AT  
2:00 PM PST

 PAC-12  
NETWORKS

 PAC-  
12.COM ▶

 PAC-12 NOW  
▶









Chantel Osahor double-double  
paces Washington win over  
Utah



Women's Hoops: It's a  
Family Affair 



#### PAC-12 WOMEN'S BASKETBALL SCORES

	02/12 11:00 AM PST	02/12 11:00 AM PST	02/12 1:00 PM PST
 USC	 ARIZ	 15 UCLA	
 ORE	 WSU	 9 ORST	
Pac-12 Networks	Pac-12 Networks	Pac-12 Networks	

#### MORE: UTAH AT WASHINGTON - WOMEN'S BASKETBALL

Plum Named Seattle  
Female Sports Star  
Of The Year



WASHINGTON  
WOMEN'S  
BASKETBALL

VIDEOS

SCORES/SCHEDULE



UTAH WOMEN'S  
BASKETBALL

VIDEOS

SCORES/SCHEDULE



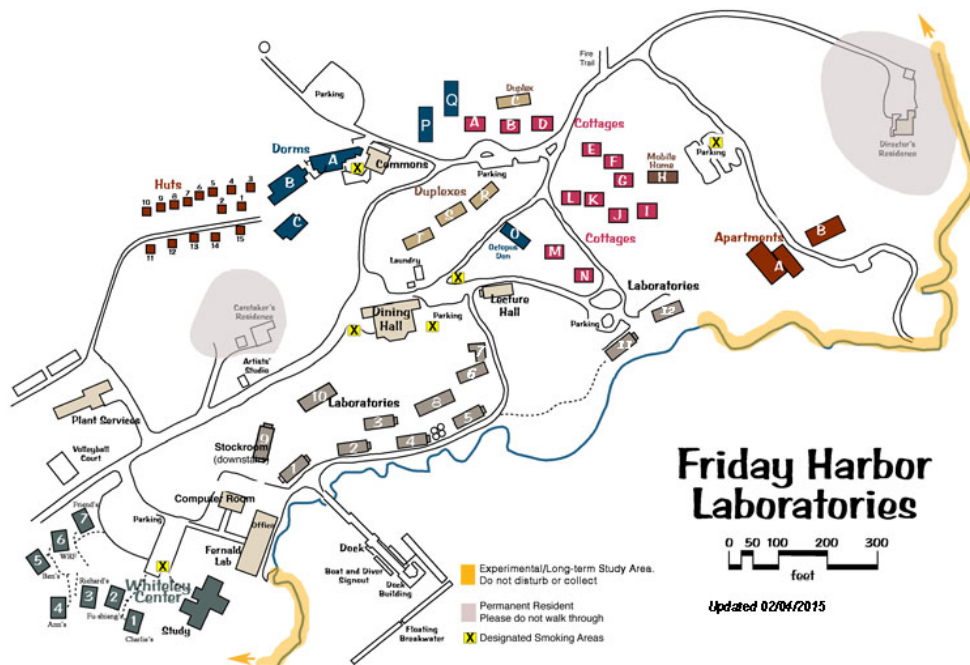
PAC-12 WOMEN'S  
BASKETBALL



[Home](#) [About](#) [Research](#) [Students](#) [Outreach](#) [Facilities](#) [Directory](#) [Resources](#) [Visiting FHL](#) [Whiteley Center](#) [Support FHL](#)

## Campus Map

Map text too small? [Download resizeable campus map - 5MB PDF](#)





[Home](#)
[About](#)
[Research](#)
[Students](#)
[Outreach](#)
[Facilities](#)
[Directory](#)
[Resources](#)
[Visiting FHL](#)
[Whiteley Center](#)
[Support FHL](#)

## R/V Centennial

[General Description](#)

[Equipment](#)

[Rate](#)

[Contact](#)

[Calendar](#)

[Adopt-A-Trip](#)

[Detailed Specifications >>](#)

### General Description

Length over all: 58'

Beam: 19'6"

Hull: Steel

Working deck: 610 sq. ft. (covered exterior wet lab: 112 sq. ft.)

Interior dry-electronics lab: approximately 200 sq. ft

Cruising speed: 9-10 knots

Sleeps: 6 crew-scientists (multi-day cruises encouraged)

Maximum crew plus passengers: 34 (25 for trawls or dredges)

Fuel capacity: 3600 gal



### Equipment

Remotely Operated Vehicle: Deep Ocean Engineering Phantom HD-2+2, 1000 depth capacity, 1100 ft. umbilical, high resolution color camera, video output to 50" color plasma monitor in dry-lab, digital video recorder, lateral thruster, and Hypack-Trackpoint navigational system, forward looking sonar, manipulator arm.

Trolling valve (for slow speed operation)

Bow thruster

Floodable tank amidships (1200 cu. ft.) for adjusting ballast, and aft tank (70 cu. ft., below deck) for holding live fish.

2-boom system for lifting instruments overboard, trawling, dredging, and plankton work. Safe Working Load (SWL) for main boom and winch set to 4500 lbs. Main boom has under-slung main wire run through a hydraulically movable trolley system.

High volume wash down pump. Additional seawater system pipes undisturbed subsurface water from the ship's bow to the wet lab.

Two Dugas trawl winches (to support single and double wire trawling), each with 400 fathoms wire rope. Hydraulic trawl reel.

Instrument well (15" diameter) for deploying transducers

Electrical VDC: 12 and 24 volt system

Electrical VAC: 40 KW (John Deere) and 25 KW (Yanmar) generators

Extensive bridge electronics and navigational systems

Extensive safety equipment including 30 person and 6 person (offshore) life rafts with hydrostatic release. 8 survival suits.

Nets and doors (2.5m Fishbuster) for one and two wire trawling (midwater and bottom). Acoustic net monitoring system for quantitative assessment of trawls. Second trawl system (single wire) utilizing smaller doors and trawl (otter trawl).

Hydro-winch with 800m Armagraph (.332) conducting cable for real-time data collection. CTD (temperature, salinity, dissolved oxygen, and fluorescence) and 12 Niskin bottle carousel.

Rock, mud, and anchor dredges, beam trawl, Van Veen grab, miscellaneous plankton nets (including opening-closing)

Tritech-SeaKing 325 kHz side scan sonar (can be deployed from Centennial or from ROV)

Sontek 250kHz Acoustic Doppler Current Profiler (approximately 200m range) with bottom tracking

Ample freezer and refrigerator space for sample storage