



NANORACKS

Commercial Payload Hardware



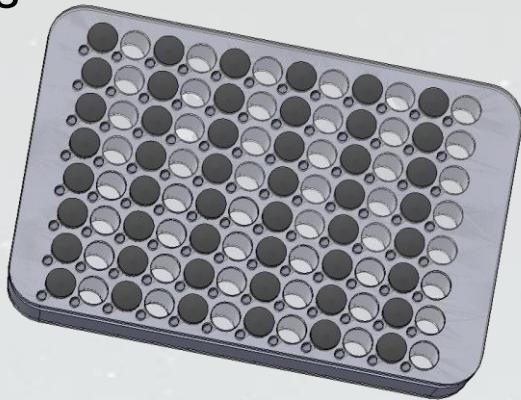
NanoRacks Payload Hardware

NanoRacks' permanently installed US National Lab facilities provide microgravity research opportunities for a variety of payloads types:

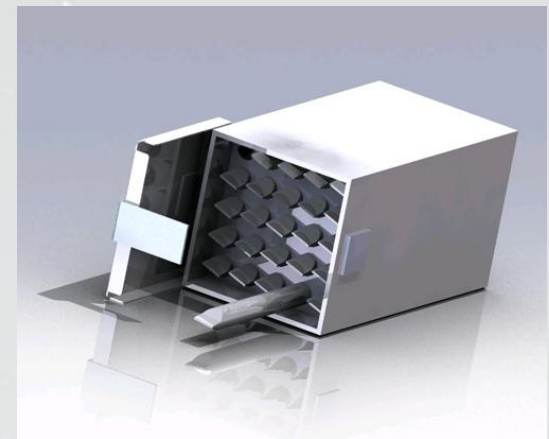
NanoLabs



Microplates



MixSticks



With further facilities for educational and commercial research currently in development

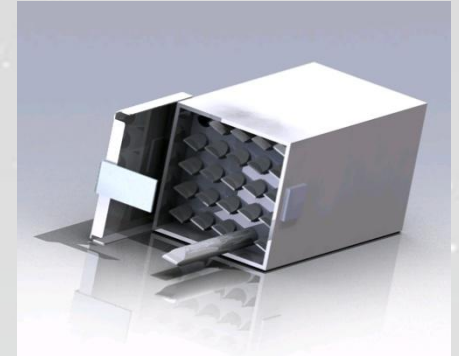
NanoLabs

- Educational Experiments
- Massively Parallel Experiment
- Students Operate Ground Control
- Crystal Growth
- Internet Interface
- Starts in January 2012



Fluid MixStix

- 7.7 mL Volume
- Lightstick Operation
- Fluid Mixing
- 24/2CU Box
- Flight Proven
- Returned on Soyuz



Secondary Payload Opportunities

- GEO Shared Ride
- Falcon 9 External
- Progress/Soyuz
- ATV/HTV

Other Opportunities

- Orbital Bookings
- Internet Based Experiments
- Rapid Prototyping
- DragonLab
- TRL Raising

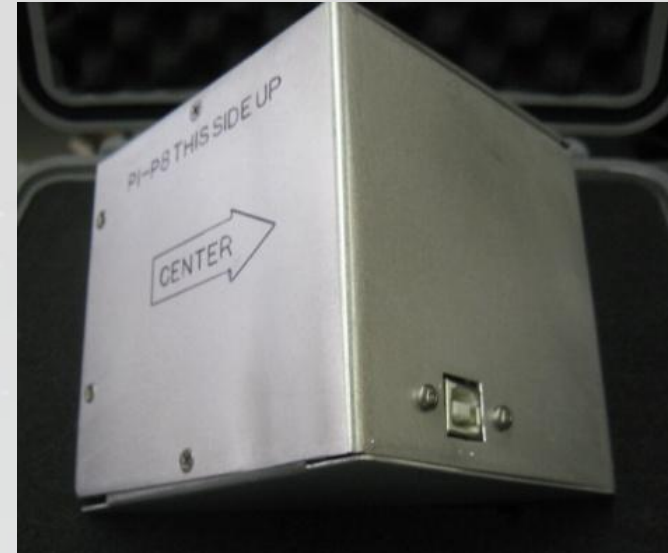
Extra Services

- Design
- Safety
- Integration
- Verification
- Late Access/Early Retrieval
- Launch/Landing Facilities
- Operations Control Center

NanoRacks Payloads

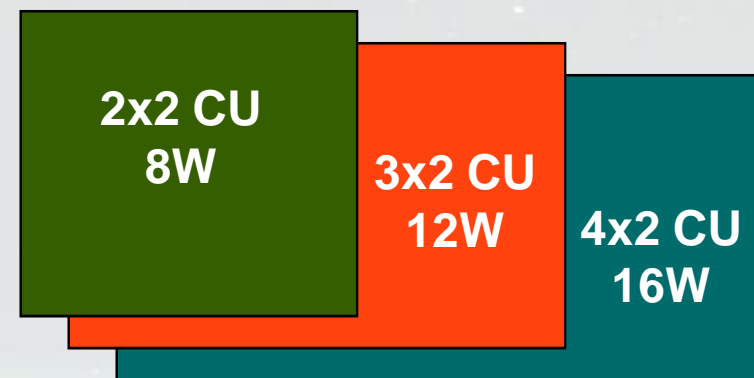
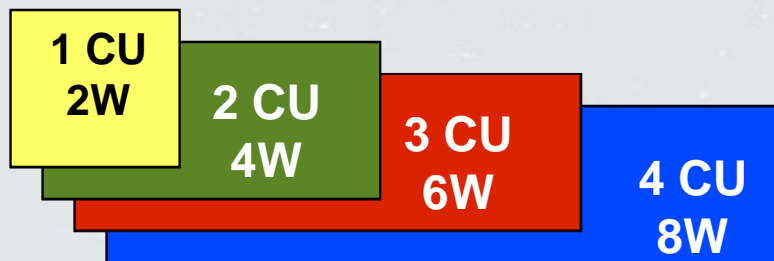
Ratings per NanoLab Module

Maximum Mass per CU.....	1000g
Maximum Power per CU.....	2 Watts
Maximum Voltage.....	5 VDC
Maximum Current per CU.....	400 mA
Maximum Cooling per CU.....	2 Watts
Data.....	USB Connectivity
Crew Time.....	Negotiated as needed
Delivery Timeframe:.....	L-6 to Late Access
Return Mass.....	Soyuz limit to 1 kg
Transport Method.....	Cargo Transfer Bags



NanoRacks NanoLab Modules:

May be configured as follows:

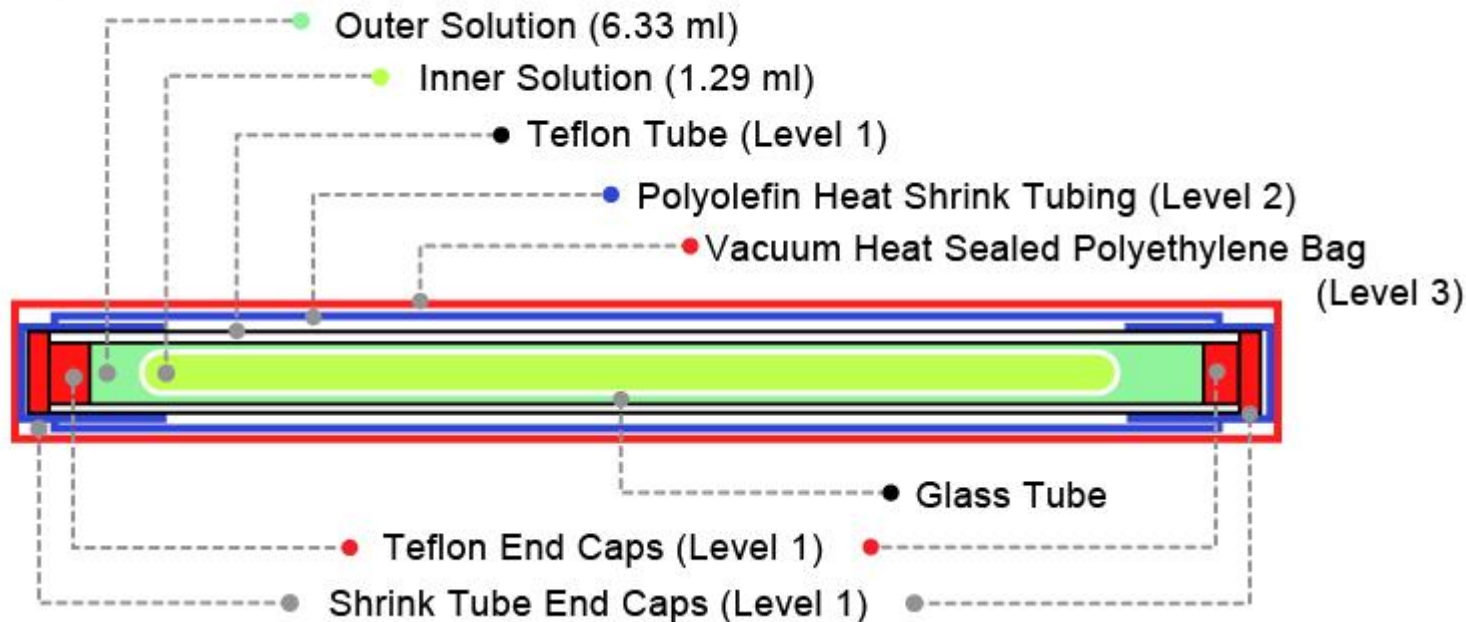


NanoRacks MixStix

- NR MixStix housed in a 2U consisting of 24 MixStix tubes
- Each NR MixStix contains a glass inner ampoule with a volume of 1.29 ml and an outer Teflon tube with a volume of 6.33 ml.
- Two sections or Three section to be mixed are possible
- Triple containment for NASA safety regulations



Operation: Flex outer tube to break inner ampoule to mix solution



Estimated Launch Schedule:

Unmanned Vehicles to International Space Station 2011-12

Flight	42P	43P	STS-135/ULF7	SpX D-2
Est. Launch Date	4/29/11	6/23/11	6/28/11	7/17/11
	Progress	Progress	Shuttle	SpaceX

Flight	44P	SpX D-3	45P	SpX-1	46P
Est. Launch Date	9/1/11	10/10/11	10/28/11	12/9/11	12/29/11
	Progress	SpaceX	Progress	SpaceX	Progress

Flight	HTV3	ATV3	ORB D1	SpX-2
Est. Launch Date	1/25/12	3/8/12	3/13/12	4/14/12
	HTV	ATV	Orbital Science	SpaceX

Example Schedule

- 1) Contract signing
- 2) Payload development and interface with NanoRacks on data
- 3) Submission of all data to NanoRacks team
- 4) NASA safety review phase II L-6 months
- 5) Payload Delivered to Houston L-3 months
- 6) Final approval

We are averaging 9 months from contract signing to launch

NanoRacks Payload Hardware Prices and Services

Payload Types	Size of Payload
NanoLabs on NR-1 and 2 NanoLabs NR-3 \$225K NanoLabs NR-4 TBD	1U \$60k + for standard mission
MixSticks	2U/24 MixStix \$10k + for standard mission Minimum of 4 Stix
Microplates	2U/5 Microplates/24 wells per Microplate \$15/ well Minimum of 4 well per flight Plate Reader or Microscope use included
Use of Microscopes	To be discussed
Use of Centrifuge	To be discussed

Extra prices include sample return, payload development and hardware development

Frequently Asked Questions

Q - How do I get started?

A - Fill out our website questionnaire

Q - What can I fly?

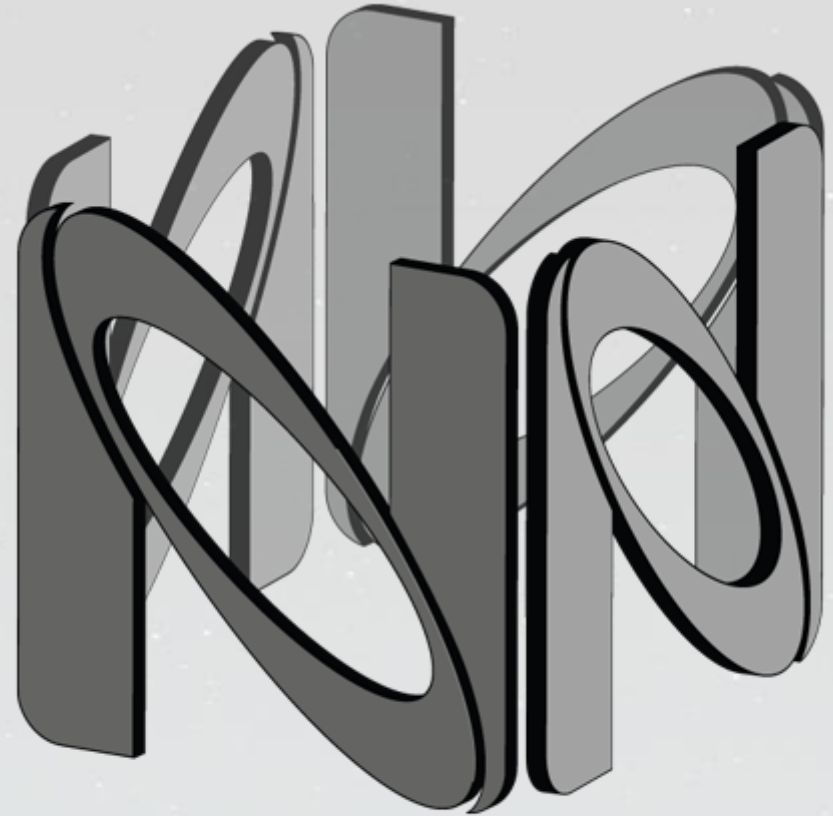
- A -** Electronics are easy
- Triple contained for toxic items
 - No radioactive items
 - Stay in our box...

Q - How long does it take?

- A -** About 9 months
- 1 month on-orbit

Q - What Does Commercial Mean?

- A -** Contract with NanoRacks
- Information kept Proprietary
 - Fast track commercial practices
 - No need for NASA interface
 - All NASA regs handled by NR
 - IP to be kept with you



www.nanoracks.com