Shutdown Success Story

Nanopositioning Stages

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NANOPOSITIONING STAGES

TEAM

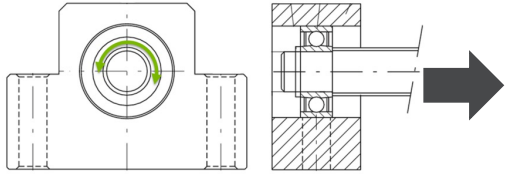
- Members from many XSD groups including: Nanopositioning support lab, Optics, Beamline Instrumentation, Design and Drafting, and beamline staff

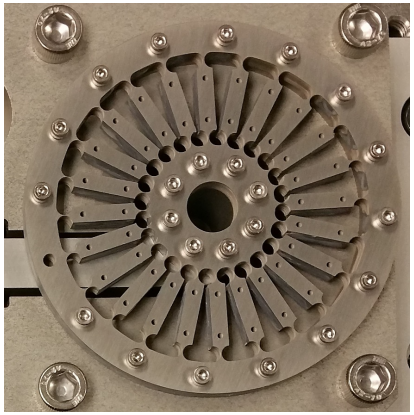
SCOPE

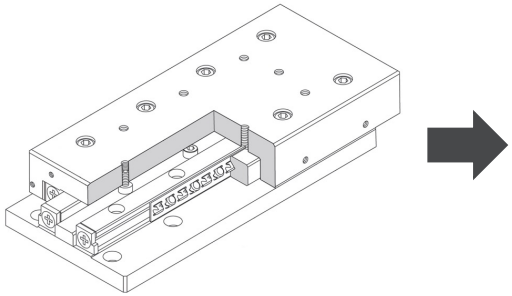
- Design and build nanopositioning stages for nano-focusing optics and sample positioning

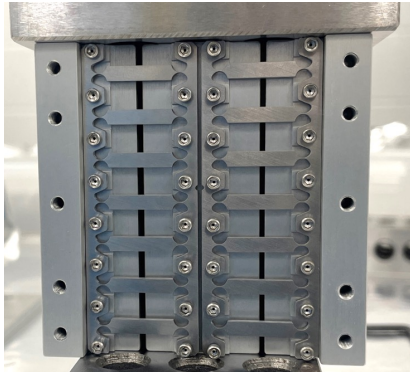
DESIGN PRINCIPLE

- Use flexure bearings for their repeatability and stability





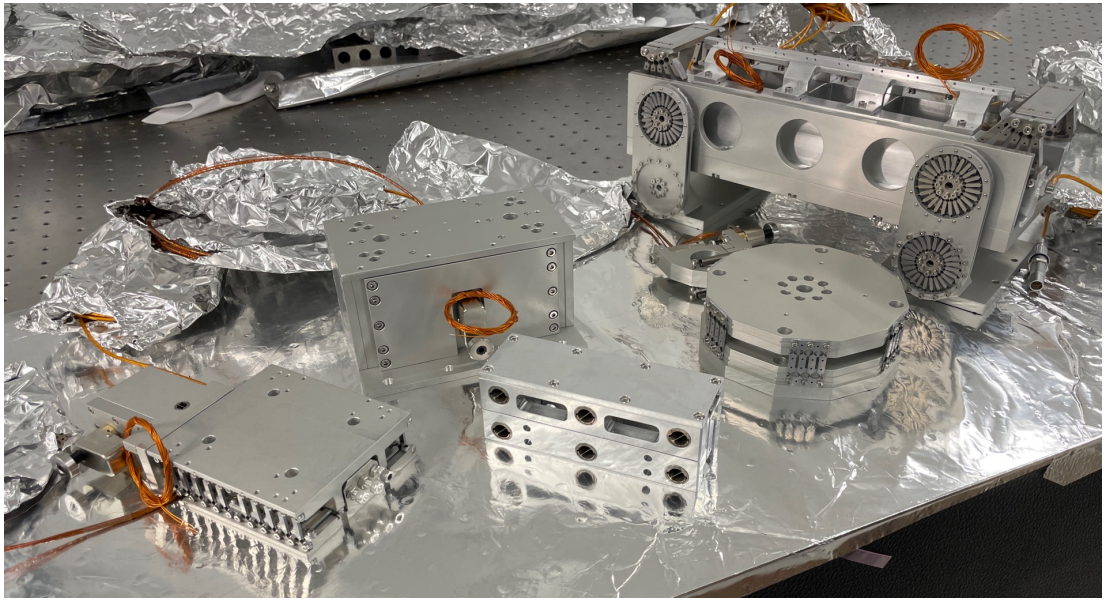




NANOPOSITIONING STAGES

SCALE

- 12 vertical stages
- 15 horizontal stages
- 4 rotation stages
- 7 passive tilt guides
- 6 mirror benders
- 2 long travel tip/tilt vertical stages
- 5 system assemblies
  (XPCS, CSSI, ISN, POLAR 1, POLAR 2)
- **All vacuum compatible**
- **All in-house design**



Left to right, horizontal stage, vertical stage, long travel guide, rotation stage, passive tilt guide with mirror bender nested inside

NANOPOSITIONING STAGES

ASSEMBLY TESTING

- Team of engineers and scientists assembling stages in mini assembly line

SUCCESSES

- Manufactured all stage components
- ~50% of components assembled, remainder continuing
- XPCS system test installed in vacuum tank
- Combined motion achieved