The Advanced Prototyping Center (APC) is a new state-of-the-art facility where researchers can design and construct scientific instrumentation. It is a Yale core facility open to the entire Yale community. To access the APC contact James Nikkel, who holds regular office hours to help users.

### Water Jet Cutter

The Flow Nano Jet Abrasive water jet cutter is the most powerful machine in the APC, cutting through almost any material.

**Capabilities:**
- Cuts material up to 10 cm thick
- ~10 μm positioning accuracy
- 1.2 m x 0.65 m cutting area
- Nozzle rises up to 15 cm vertically
- 0.02 mm / 0.3 m linear straightness accuracy

### Laser Cutter

The Coherent Meta2C is a 250 W laser that cuts and engraves quickly and easily on materials such as acrylic, paper, wood, and thin steel.

**Capabilities:**
- Cuts up to 2.5 cm thick acrylic
- ~25 μm positioning accuracy
- 1.23 m x 1.23 m cutting area
- Platform lowers 30 cm vertically
- Onboard camera for alignment and tracking

### 3D Printers

Two Formlabs Form2 SLA printers and a Dremel 3D20 FDM printer enable rapid prototyping of complicated plastic parts.

**Form2 Capabilities:**
- 25 μm layer thickness
- 14.5 x 14.5 x 17.5 cm build volume
- Resins of different strength, flexibility, and color

**Dremel Capabilities:**
- FDM (filament) printer
- 100 μm resolution
- Minimal post-processing of printed object is required

### Rapid Prototyping: Start to finish

1. **Have an idea.**
2. **Make a design.**
3. **Start prototyping.** Use different tools to fit your project’s needs.
   - 3D print complex plastic shapes.
   - Cut structural metal parts on the water jet.
   - Engrave or cut acrylic parts with the laser cutter.
4. **Assemble and test your prototype.**
5. **Iterate till it works.** Repeat steps 2-4 until you get it right!

The APC welcomes researchers from all departments!

Computers with CAD software such as Solidworks as well as machine-specific CAM software are available at the APC.

Contact [james.nikkel@yale.edu](mailto:james.nikkel@yale.edu) for more information.

**Location:** Yale Wright Laboratory 272 Whitney Room 105