

Center for Innovative Materials Processing through Direct Digital Deposition (CIMP-3D)

Applied Research Lab / College of Engineering / College of Earth and Mineral Sciences joint Research Center

Description: Building on a 30+ year history in high power laser material processing research, development, and implementation, the Applied Research Laboratory at Penn State University (ARL Penn State) operates the CIMP-3D on behalf of Penn State. CIMP-3D is dedicated to discovering, developing, and deploying Additive Manufacturing technology of all kinds. The Center is managed within ARL's Material Science Division, which is also home to extensive capabilities in advanced coatings and drivetrain R&D. As a DoD-designated, U.S. Navy University Affiliated Research Center (UARC), ARL maintains a long-term strategic relationship with the U.S. Navy, provides support for the other services, and serves as a University Center of Excellence in Defense Science, Systems, and Technologies.

CIMP-3D is designated as DARPA's Manufacturing Demonstration Facility for Additive Manufacturing and is a founding member of America Makes. The Center hosts expertise and state-of-the-art equipment critical for additive manufacturing research, including:

- powder bed additive manufacturing systems
- directed energy deposition machines
- hybrid additive-subtractive equipment
- 3D computed tomography
- sensors for processing monitoring

CIMP-3D comprises more than 45 faculty associates covering four colleges and four research institutions within Penn State in a 16,000 sq. ft. facility and an annual research budget exceeding \$6,000,000. The Center provides key support to Penn State's MS/MEng Additive Manufacturing and Design graduate degree program, and is operated by more than 15 full-time ARL faculty and staff researchers and numerous students (all U.S. citizens) covering a wide range of engineering and material science expertise. The Center has on-site access to a full range of ancillary equipment and capabilities, including material preparation, powder characterization, process sensing techniques, machining, inspection, material characterization and metrology.