

EXPERTS IN EPITAXY

STANDARD AND CUSTOM MOCVD SYSTEMS
EPITAXIAL GROWTH AND HOSTING SERVICES



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STANDARD AND CUSTOMIZED EPITAXIAL REACTOR SYSTEMS

Valence Process Equipment offers both production and research-sized MOCVD reactor systems for Group III-Nitride and InGaAl-AsP material systems. We can provide a high degree of customization to suit your specific process requirements.

Our patented, 500-series platform features a non-clogging, temperature-controlled showerhead gas injector, and our high symmetry, minimized-volume, non-recirculating profiled reactor, enabling production-level capacities with pilot-level gas and MO usage.

Along with high-speed wafer carrier rotation, rapid heating capability to 1200C, and high-velocity, uniform-flow fluid gaps providing efficient heat removal and uniform wall temperatures, the 500-series provides state-of-the-art epitaxial materials properties and uniformities at unbeatable efficiencies!

For research and lower-volume production applications, our 200-series platform scales down the size and scales up the performance – faster transitions, heating and rotation – higher temperatures and efficiencies – greater flexibility to explore new processes and materials!

Our systems are highly reliable, due to simplicity of design, and, when spare parts are needed, we won't price gouge you!!!

Valence provides world-wide support and service either directly or through our network of partners.



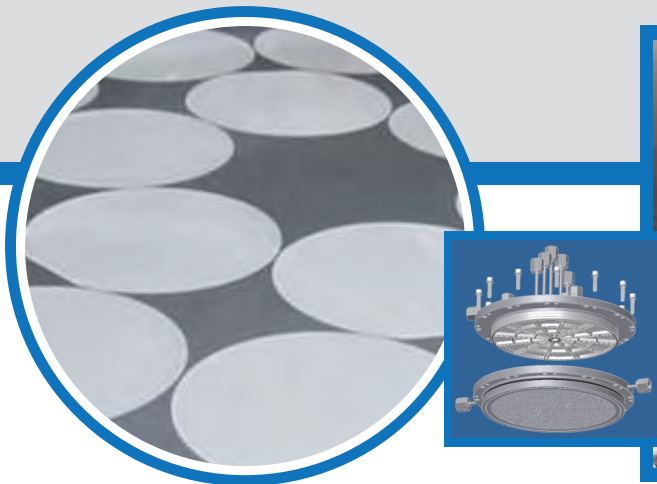
CAPACITY SPECIFICATIONS:

250- series capacity

10x2in, 5x3in, 3x4in, 1x6in, 1x8in

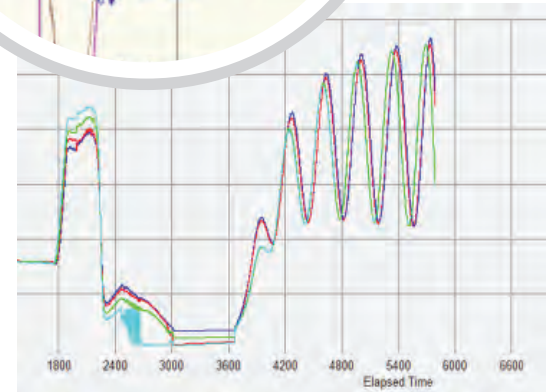
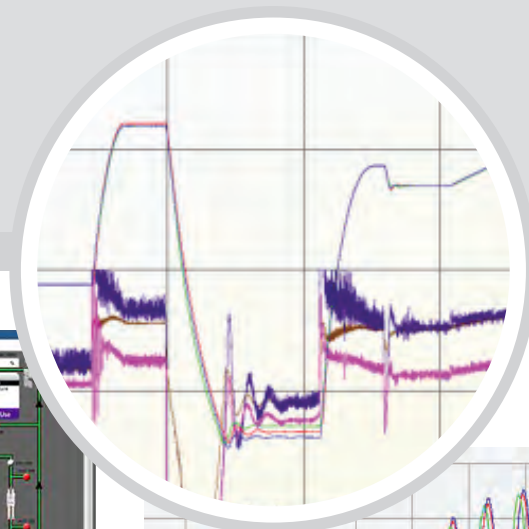
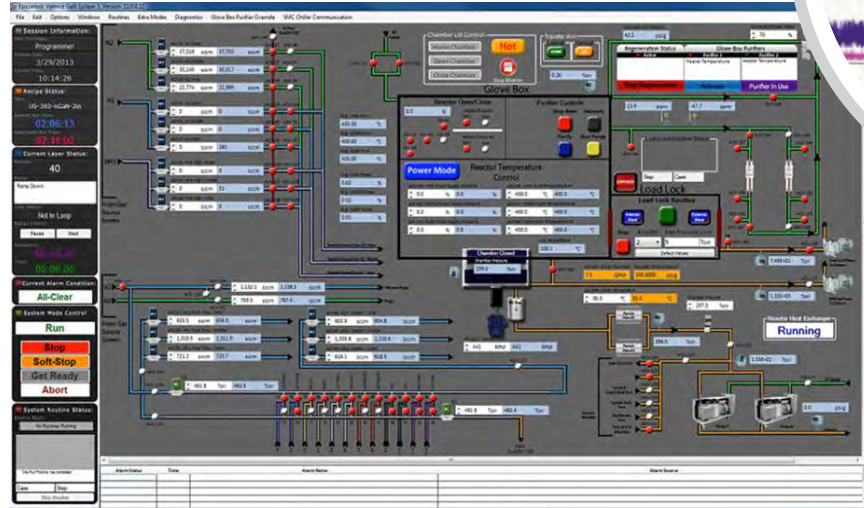
500-series capacity

72x2in, 20x4in, 7x6in, 4x8in



Proprietary Gas Injector Design

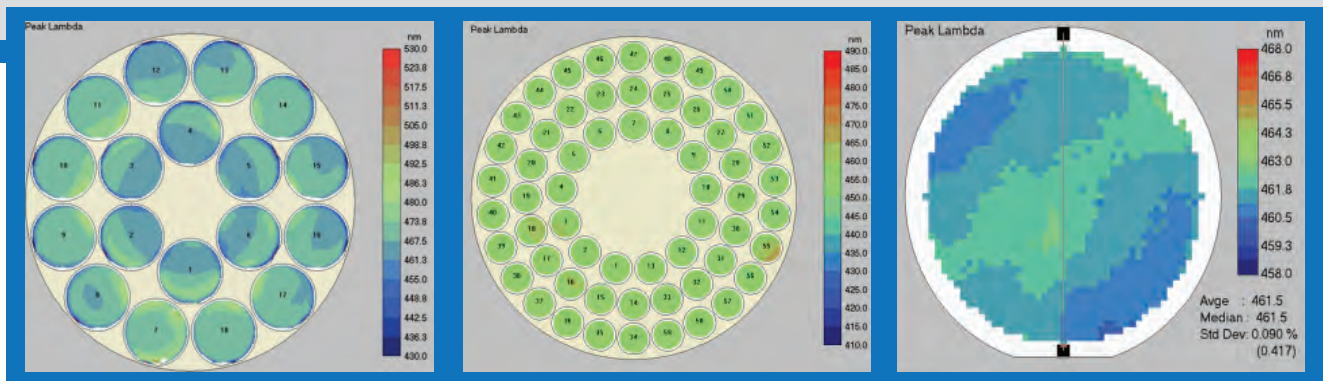
ADVANCED CONTROL SOFTWARE AND STATE-OF-THE ART IN-SITU INSTRUMENTATION



Valence systems are controlled by our highly-configurable, Windows/C++ based, EpiControl operating software, that includes multiple user access levels, intuitive graphical screen views, user-guiding operating and maintenance routines, digital and analog warning/alarm triggers and responses, real-time data trend plotting and log file generation, along with many other customizable features.

Control loop temperatures are obtained by emissivity-corrected pyrometers optimized for high-speed rotation of high-wafer-density platens. Wafer reflectance monitoring at 940, 650 and 405nm wavelengths, as well as wafer curvature/bow monitoring are all included in our standard package.

EXTENSIVE, PROVEN PROCESS CAPABILITY WITH CORRESPONDING MATERIAL CHARACTERIZATION





FACILITY SERVICES:

208 and 380 VAC, 3- Phase Power
Purified N₂, H₂, and NH₃ Gases
Cooling Water Recirculation Loop
Cabinet and Exhaust Ventilation

MATERIAL SPECIFICATIONS:

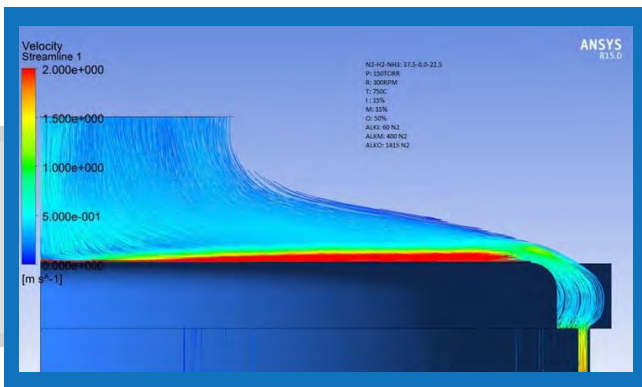
GaN, InGAN, AlGaN, AlN
2 in., 3 in., 6 in., 8 in. Substrates
Sapphire, Silicon, Silicon Carbide

EPITAXIAL HOSTING SERVICES

Valence provides contract epitaxial growth services on its operating MOCVD systems.

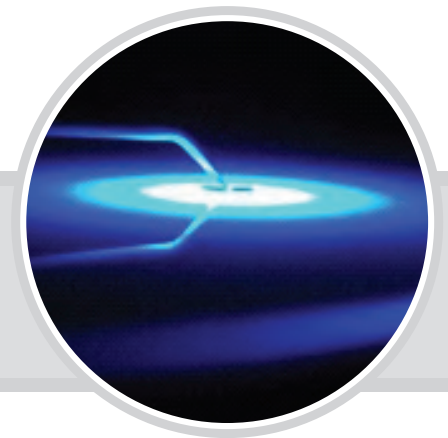
Alternatively, Valence also offers facility space that can host a customer's own system and personnel, helping reduce the up-front investment for early stage companies.

On-site wafer characterization, access to MOCVD process scientists and experienced maintenance personnel are other benefits of working with VPE.



CFD Analysis

PROCESS R&D and SCALE-UP CONSULTING



Whether the objective is developing a new process or material structure or scaling up a developed process to production levels, Valence can help achieve the goal.

Our expertise in chemistry, fluid dynamics, material characterization, device physics, mechanical engineering, system design and system operating software development can help to accelerate YOUR company's roadmap to success.

We look forward to hearing from you to discuss YOUR epitaxial materials application!