



# Liberty PRO™

Automated Production Scale Microwave Peptide Synthesizer









# The world's first large scale, automated microwave peptide synthesizer.

The Liberty PRO allows for fully automated, production scale, microwave peptide synthesis using multiple reaction vessel sizes for a variety of synthetic scales. Batch crude peptides up to 1 kg can be synthesized with a typical cycle time of 15-45 min per amino acid. Easily scale up peptides optimized on the Liberty Blue™.

## Features

- Full cGMP compatibility
- 3 L, 8 L, and 15 L reaction vessels
- NIST traceable internal temperature control
- Dual-mode agitation with mechanical stirring and N<sub>2</sub> mixing
- Inert, cGMP compliant wetted materials

## Unique Chemistry

- CarboMAX™ coupling chemistry (patented)
- Microwave deprotection and coupling (patented)

## Scalable Synthesis

# Seamless method transfer from R&D to production scale.

Develop synthetic methodology on the R&D scale Liberty systems and easily reproduce for the first time at production scale with the Liberty PRO.





## Reproducible Results

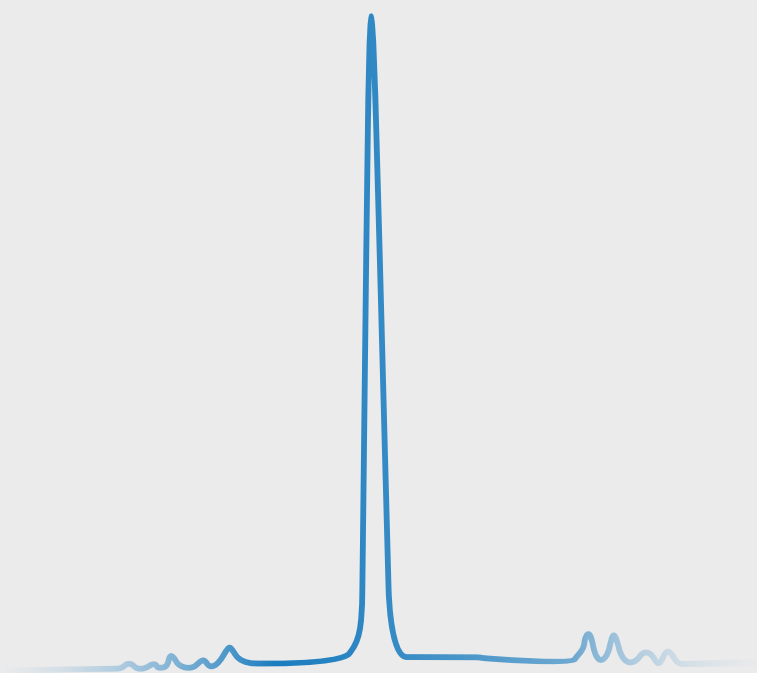
Ensure the quality of every batch.

Be confident in batch reproducibility with the latest in engineering for fluidic deliveries, NIST traceable internal temperature monitoring, and optimized dual-mode mixing with overhead mechanical agitation and N<sub>2</sub> bubbling.

## Purity & Speed

Synthesize large batches of peptides faster than conventional reactors.

The Liberty PRO provides unmatched purity and speed for large-scale synthesis of standard and difficult peptides of any length up to 1 kg per batch. Using controlled microwave energy to heat combined with innovative hardware contributes to optimal chemistry conditions and the highest purity and yield for pharmaceutically relevant peptides.





## Full cGMP Compatibility

# Fully verifiable and traceable software and instrumentation.

The Liberty PRO's advanced software allows for simple and flexible programming control of standard and complex peptides. Software complies with 21 CFR Part 11 and offers complete audit trail traceability, run history and method reports, and can be equipped with user level access levels with full password protection.

### Instrument regulatory documentation provided:

- Factory Acceptance Testing (FAT)
- Functional and Software Design Specification (FDS/SDS)
- Extractables/Leachables Testing
- Installation and Operation Qualification (IQ/OQ)
- Proof of certification of wetted parts
- ATEX analysis report





## Maximize your production time.

Maximize production time with the Liberty PRO's advanced fluidics design and optimized microwave chemistry. With cycle times 5x faster than a conventional reactor, the Liberty PRO can produce as much peptide as a 75 L conventional reactor in one day.

System	10mer (resin = 0.7 mmol/g, MW = 1200 Da)	35mer (resin = 0.35 mmol/g, MW = 3900 Da)
<b>Liberty PRO</b> (15L reactor)	<b>800 mmol completed in 7.5 hours</b> (2.4 mol crude peptide on resin and 2.88 kg crude peptide per day)	<b>250 mmol completed in 26.25 hours</b> (229 mmol crude peptide on resin and 893 g crude peptide per day)
<b>Conventional</b> (75L reactor)	<b>4 mol completed in 40 hours</b> (2.4 mol crude peptide on resin and 2.88 kg crude peptide per day)	<b>1.25 mol completed in 131.25 hours</b> (229 mmol crude peptide on resin and 893 g crude peptide per day)



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