

MOLECULAR HIVING™ TECHNOLOGY

50
YEARS
BACHEM

Molecular Hiving™ Technology Jitsubo - Bachem Partnership

BACHEM und Jitsubo have signed an exclusive licensing agreement for Jitsubo's Molecular Hiving™ technology.

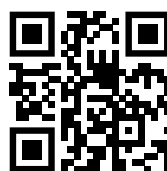
The use of this technology allows for more environmentally friendly chemistry, reduced manufacturing costs and improved sustainability. Various projects for active pharmaceutical ingredients (APIs) as well as cosmetic peptides have already been initiated and successfully realized with Jitsubo's technology at Bachem.

Applications of Molecular Hiving™ Technology

Molecular Hiving™ technology is especially suitable for the synthesis of peptidic ingredients for cosmetic products, as CMR* solvents and reagents can entirely be avoided during the manufacturing process.

Advantages of Molecular Hiving™ Technology

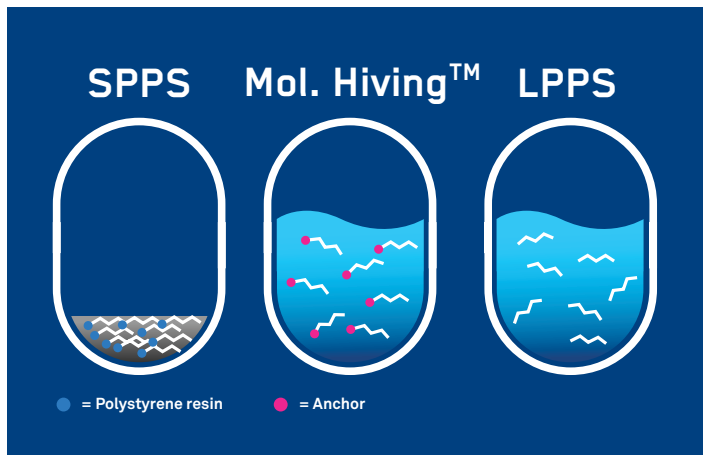
- **CMR*-free Processes**
Synthesis without the use of hazardous solvents.
- **Cost Efficient**
Lower equivalents of Fmoc-amino acid derivatives and coupling reagents are required compared to SPPS.
- **"Greener" Processes**
Significant reduction of solvent consumption.



Watch our Webinar on
Molecular Hiving™ Technology



BACHEM



Molecular Hiving™ Technology

Molecular Hiving™ technology combines the advantages of solid phase peptide synthesis (SPPS) and liquid phase peptide synthesis (LPPS) processes.

The synthesis of peptides using Molecular Hiving™ technology is similar to the SPPS processes, but all process steps are carried out entirely in solution. Analogous to SPPS, the peptide assembly proceeds from the C-terminus to the N-terminus. Instead of a solid phase (resin), the peptide is built up on an anchor (tags) that is soluble in organic solvents but insoluble in aqueous solutions. The technology allows the use of the same Fmoc amino acid derivatives as for Fmoc-SPPS. Excess amino acid derivatives and by-products as well as the used reagents can be removed by aqueous extractions.

Molecular Hiving™ technology combines the advantages of solid phase peptide synthesis (SPPS) and liquid phase peptide synthesis (LPPS) processes.

	LPPS	SPPS
Reaction Medium	Solution	Gel (swollen insoluble polymer)
Synthesis Strategy	Convergent or stepwise	Stepwise
Temporary Protecting Group	Typically Boc or Z	Typically Fmoc
Rapidity of Synthesis	Slow	Fast
Consumption of Amino Acid Derivatives	Moderate	Medium to high
Consumption of Organic Solvents	Moderate to medium	High
In-process Control	Direct monitoring applicable (e.g. HPLC)	Typically indirect monitoring applied (e.g. resin color tests)
Isolation of Intermediates	Typically isolated by precipitation	No isolation of intermediates

■ Advantages of SPPS and LPPS are marked in magenta

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