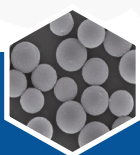
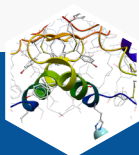


SOLUTIONS FOR PEPTIDE SYNTHESIS





Founded in 1995, SiliCycle is specialized in the development, manufacturing and commercialization of high value silica gels and specialty products for chromatography, purification and synthesis.

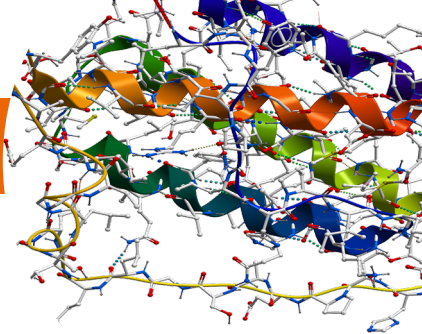
Solutions for Peptide Synthesis

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© Photo Charles Q'Hara

SiliCycle Solutions for Peptide Synthesis



- Solutions for peptide synthesis
- Solutions for work-up after peptide synthesis

SiliCycle offers solutions to problems encountered in the peptide research field, either for the peptide synthesis itself or for subsequent work-up.

Peptide synthesis:

- Supported SiliaBond Reagents can be used during peptide synthesis and other amide bond-forming reactions, and excess reagents elimination will be reduced to a simple filtration!
- Some SiliaBond Reagents can also be used for Fmoc deprotection of peptides in liquid phase.

Work-up after peptide synthesis:

- SiliaBond Reagents can be used for amines scavenging (*catch and release of weak cations*), amine free basing, HOBt scavenging, TFA removal, or residual azide removal after a click reaction.
- SiliaPrep SPE cartridges packed with C18 Widedpore (WPD, 125 Å) can be used for trap-elute of relatively polar peptides after cleavage or cysteine oxidation.
- SiliaMetS are useful to remove residual metal after a catalytic reaction.
- SiliaSep flash cartridges can be used for peptide purification.
- SiliaChrom HPLC columns are available in analytical and preparative dimensions (4.6 mm ID up to 50 mm ID), and in a variety of phases, to allow large scale peptide purification. In addition, spherical silica gels SiliaSphere are also offered in bulk to allow DAC packing, giving even more options.

Quality and Regulatory Documentation

SiliCycle's products are more and more used in GMP pharmaceutical, biotechnology and fine chemical industries as well as contract research and manufacturing organizations. Many have run their own analysis proving that our products can safely be used without compromising the purity of their compounds.

SiliCycle is committed to high quality standards and all products are manufactured in an ISO 9001:2015 compliant facility and subjected to stringent quality control.

For any inquiries, please contact: support@silicycle.com

All products are shipped with the following information:

- Certificate of Analysis (COA)
- Safety Data Sheet (SDS)
- Technical information

Other statements available under request:

- BSE / TSE Declaration (*non animal-derived*)
- GMO-Free Certificate
- Melamine-Free Certificate, etc.

SiliCycle can also work with you to provide customized regulatory documents, including specific analytical tests in line with your needs.



Manufacturing Capability

Functionalized silica gels are manufactured at our headquarter in Quebec City, where we can meet all customers production needs.

Our state of the art facilities include (*but are not limited to*):

- 1,000 L to 10,000 L reactors (*total capacity of 38,000 L*)
- Stainless steel and hastelloy nutsche filters (3 m²)
- Bulk solvent tank farm (60,000 L capacity)



Enjoy a virtual tour of SiliCycle's facility

Reagents and Organic Scavengers Portfolio

Reagents and Organic Scavengers Technical Information				
Products	Structure	Brief Description	Typical Reactions	Typical Characteristics ^{a, b}
SiliaBond Carbodiimide PN: R70530B Loading: ≥ 0.91 mmol/g Endcapping: Yes		Most commonly used reagents in peptide synthesis and other amide bond-forming reactions of primary and secondary amines with carboxylic acids.	Amide coupling with acids, acyl chlorides and amines	Color: Orange Density: 0.751 g/mL Solvent Compatibility: 3 Prolonged Storage: 3 Shelf Life: 2 Years
SiliaBond Ethyl Carbodiimide PN: R70630B Loading: ≥ 0.32 mmol/g Endcapping: Yes				Color: Orange Density: 0.770 g/mL Solvent Compatibility: 3 Prolonged Storage: 3 Shelf Life: 2 Years
SiliaBond Piperazine PN: R60030B Loading: ≥ 0.83 mmol/g Endcapping: Yes		Used deprotecting and scavenging agent for Fmoc and Bsmoc amino protecting groups. SiliaBond Piperazine may also be used to scavenge electrophiles.	Fmoc and Bsoc deprotection, organic scavenger	Color: Off-white Density: 0.671 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaBond Carbonate PN: R66030B Loading: ≥ 0.46 mmol/g Endcapping: Yes		Used as a heterogeneous catalyst in the Henry reaction in catalytic amounts drive the reaction forward to high yield with or without solvent.	Free basing of amine	Color: Off-white Density: 0.608 g/mL Solvent Compatibility: 3 Prolonged Storage: 1 Shelf Life: 1 Year
SiliaBond Cyano PN: R38030B Loading: ≥ 1.38 mmol/g Endcapping: Yes		Less polar than silica, SiliaBond Cyano has a great affinity for polar compounds.	Residual azide removal, after a click reaction	Color: Off-white Density: 0.703 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaBond Tosic Acid (SCX) PN: R60530B Loading: ≥ 0.54 meq/g Endcapping: Yes		SiliaBond Tosic Acid is in a class of strong acids. The aromatic ring makes it slightly more acidic than other supported sulfonic acids.	Strong cation exchanger (SCX) for amine "Catch and Release" purification	Color: Off-white Density: 0.698 g/mL Solvent Compatibility: 2 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaBond Propylsulfonic Acid (SCX-2) PN: R51230B Loading: ≥ 0.63 meq/g Endcapping: Yes		Supported sulfonic acid presenting a slightly more non-polar character than the SCX, thus reducing secondary interactions.	Strong cation exchanger (SCX) for amine "Catch and Release" purification	Color: Off-white Density: 0.728 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years

Spherical Silica Gels in Bulk and HPLC Columns Portfolio

Spherical Silica Gels in Bulk and HPLC Columns Portfolio (refer to the ordering section for product number)		
Sorbent Phase	Functional Group	Typical Applications
C18		Great start for method development. Presents the maximum retention of non-polar compounds. Typically used for peptides, pesticides, PCBs, PAHs, drugs, etc.
C8		Presents less retention compared to C18. Mainly used for highly hydrophobic pesticides, small peptides and heavy drugs.
Cyano		Moderate non-polar sorbent with less hydrophobicity than C18 or C8. Purification of cyclosporine and carbohydrates. Les polar sorbent compared to silica, used for the purification of polar organic compounds.
Silica		Most polar sorbent with a slight acidic character. Used for purification of polar and non-ionic compounds.

Metal Scavengers Portfolio

Metal Scavengers Technical Information				
Scavengers	Structure	Brief Description	Metals Removed ^c	Typical Characteristics ^{a, b}
SiliaMetS Thiol PN: R51030B Loading: ≥ 1.20 mmol/g Endcapping: Yes		SiliaMetS Thiol is our most versatile and robust metal scavenger for a variety of metals under a wide range of conditions.	Ag, Au, Hg, Os, Pd & Ru Cu, Ir, Pb, Rh & Sn	Color: White Density: 0.682 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaMetS DMT PN: R79030B Loading: ≥ 0.50 mmol/g Endcapping: Yes		SiliaMetS DMT is the silica-bound equivalent of 2,4,6-trimercaptotriazine (<i>trithiocyanuric acid, TMT</i>). It is a versatile metal scavenger for a variety of metals and the preferred metal scavenger for ruthenium catalysts and hindered Pd complexes (<i>i.e. Pd(dppf)Cl2</i>).	Au, Ir, Ni, Os, Pd, Pt, Re, Rh & Ru Cd, Co, Cu, Fe, Sc & Zn	Color: Light brown Density: 0.732 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaBond Amine PN: R52030B Loading: ≥ 1.20 mmol/g Endcapping: Yes		Also known for their electrophile scavenging efficiencies and their base reagent qualities, SiliaMetS Amine, Diamine and Triamine have also proven to be very useful for the scavenging of the following metals: Pd, Pt, Cr, W and Zn.	Cd, Cr, Pd, Pt, Rh, Re & Ru Co, Cu, Fe, Hg, Pb, W & Zn	Color: Off-white Density: 0.700 g/mL Solvent Compatibility: 2 Prolonged Storage: 2 Shelf Life: 2 Years
SiliaMetS Triamine PN: R48030B Loading: ≥ 1.11 mmol/g Endcapping: Yes			Cr, Pd, Pt, W & Zn Ag, Cd, Co, Cu, Fe, Hg, Ni, Os, Pb, Rh, Ru & Sc	Color: Off-white Density: 0.736 g/mL Solvent Compatibility: 2 Prolonged Storage: 2 Shelf Life: 2 Years
SiliaMetS Cysteine PN: R80530B Loading: ≥ 0.30 mmol/g Endcapping: Yes		SiliaMetS Cysteine is the silica-bound equivalent of the amino acid cysteine. It is a versatile scavenger for a variety of metals and the preferred metal scavenger for tin residues. By attaching the molecule to the backbone via the amino group, the thiol group remains free and accessible for higher metal scavenging efficiency.	Au, Cd, Fe, Ir, Os, Ru, Sc & Sn Ca, Cr, Cs, Cu, La, Mg, Pd, Pt, Rh & Zn	Color: Orange Density: 0.665 g/mL Solvent Compatibility: 1* Prolonged Storage: 1 Shelf Life: 1 Year
SiliaMetS DOTA PN: R91030B Loading: ≥ 0.38 mmol/g Endcapping: Yes		SiliaMetS DOTA is a silica-supported tetracarboxylic acid and its various conjugate bases. DOTA molecule is a well-adopted complexing agent. Linked to various metals, so formed-complexes are used as contrast agents in cancer treatments or other medical applications.	Ca, Cu, Gd, La, Ni & Zn Co, Fe, Mg, Pd, Pt & Rh	Color: Light yellow Density: 0.681 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 1 Year
SiliaMetS Imidazole PN: R79230B Loading: ≥ 0.96 mmol/g Endcapping: Yes		SiliaMetS Imidazole is a versatile metal scavenger for a variety of metals including Cd, Co, Cu, Fe, Ni, Os, Pd and Rh.	Cd, Co, Cu, Fe, Ir, Li, Mg, Ni, Os, W & Zn Cr, Pd & Rh	Color: Off-white Density: 0.681 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaMetS TAAcOH PN: R69030B Loading: ≥ 0.41 mmol/g Endcapping: No		SiliaMetS TAAcOH & TAAcONa are supported versions of EDTA in their acid and sodium salt forms. These two products are effective metal scavengers for Ca, Mg, Li, Ir, Cs, Os, Sn, Pd, Ni and Cu.	Au, Ca, Co, Ir, Li, Mg, Ni, Os, Ru & Sc Cr, Cs, Fe, Pd, Rh & Sn	Color: Off-white Density: 0.635 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaMetS TAAcONa PN: R69230B Loading: ≥ 0.41 mmol/g Endcapping: No			Ca, Cd, Cs, Cu, Fe, Ir, La, Li, Mg, Ni, Os, Rh, Sc & Sn Cr, Pd, Ru & Zn	Color: Off-white Density: 0.712 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years
SiliaMetS Thiourea PN: R69530B Loading: ≥ 1.07 mmol/g Endcapping: Yes		SiliaMetS Thiourea is a versatile metal scavenger for all forms of palladium and is widely used in the pharmaceutical industry. Once complexed with a transition metal, it has been reported to be an effective catalyst.	Au, Pd & Ru Ag, Cu, Fe, Os, Rh, Sc & Sn	Color: Off-white Density: 0.767 g/mL Solvent Compatibility: 1 Prolonged Storage: 1 Shelf Life: 2 Years

* Although we recommend organic solvent when possible

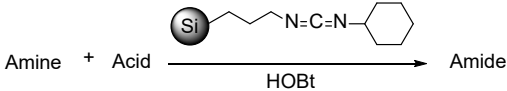
- ^a Solvent Compatibility:**
1- All solvents, aqueous and organic
2- All organic solvents
3- Anhydrous aprotic solvents

^c Scavenging Efficiency:
Best scavenger for the removal of a particular metal is indicated in **Navy Blue**
Good scavenger indicated in **Pale Blue**


- ^b Prolonged Storage:**
1- Keep dry
2- Keep cool (≤ 8°C) and dry
3- Keep cool (≤ 8°C), dry and under inert atmosphere

Peptide Synthesis and Amide Bond-Forming Reactions

1,3-Dicyclohexylcarbodiimide (*DCC*) has arguably become one of the most commonly used reagents in peptide synthesis and other amide bond-forming reactions of primary and secondary amines with carboxylic acids. The major drawback associated with using *DCC* is the formation of the urea by-product (*DCU*) which remains in solution and requires additional purification steps to remove it. However, by using Silia*Bond* Carbodiimide (*DCC*) it is possible to avoid problematic purifications. Only a simple filtration step is needed to remove the unwanted *DCU*. For more details on the experimental procedures, see [Appn_SBR004-0](#).



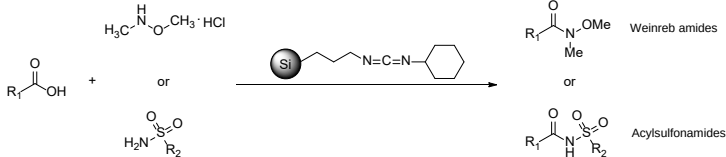
Results




Yield (%) and Purity (%) of Amides Synthesized Using SiliaBond Carbodiimide (DCC)											
Rn #	Acid	Amine	Bulk			Rn #	Acid	Amine	Bulk		
			Meth. #1	Meth. #2	SPE				Meth. #1	Meth. #2	SPE
			Yield (%) (% Purity)	Yield (%) (% Purity)	Yield (%) (% Purity)				Yield (%) (% Purity)	Yield (%) (% Purity)	Yield (%) (% Purity)
1	Benzoic acid	Aniline	75.5 (99.1)	70.1 (96.4)	81.2 (97.2)	6	Boc-Phe-OH (L)	Phenylethylamine	100.0 (97.6)	100.0 (97.6)	99.2 (90.1)
2		Benzylamine	100.0 (95.4)	80.1 (98.1)	100.0 (98.7)	7	Fmoc-Phe-OH (D)		N.A.	100.0 (> 95.0)	N.A.
3		Phenylethylamine	98.7 (97.1)	78.7 (98.3)	100.0 (98.8)	8	Z-Val-OH		100.0 (> 95.0)	93.5 (> 95.0)	100.0 (> 95.0)
4	Phenoxyacetic acid	tert-Butylamine	100.0 (97.4)	100.0 (94.0)	98.2 ^a (94.5)	9	3-Iodobenzoic acid	Benzylamine	100.0 (98.5)	100.0 (97.1)	100.0 (94.5)
5		1,2,3,4-Tetrahydro-isoquinoline	99.8 (95.0)	100.0 (92.5)	97.2 (92.4)	10	Heptanoic acid	Ethanolamine	72.3 (95.5)	84.3 (98.0)	81.3 ^b (93.0)

Notes: The final amides were analyzed by ¹H and ¹³C NMR or GC-MS. Yield corresponds to the mass of isolated product. Purity was determined by GC-FID.
a) In DMF; b) No HOBt

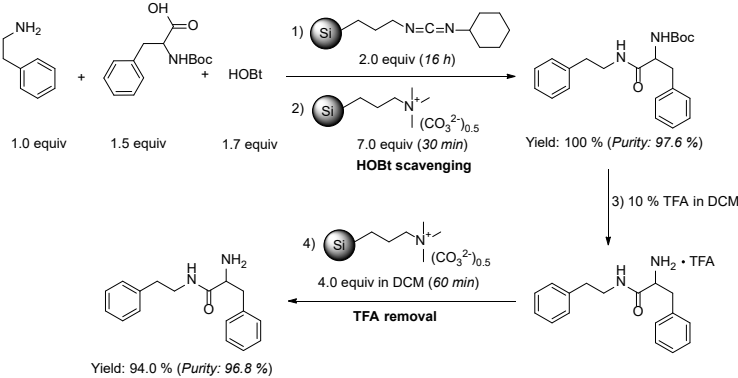
Silia*Bond* Carbodiimide (*DCC*) has also been successfully used for the synthesis of Weinreb amides and acylsulfonamides as shown here. For more details on the experimental procedures, see [Appn_SBR004-0](#).



<div> Yield (%) and Purity (%) of Weinreb Amides and Acylsulfonamides Synthesized Using SiliaBond Carbodiimide (DCC)</div>							
Rn #	Weinreb Amides			Rn #	Acylsulfonamides		
	Acid	Amine	Yield (%) (% Purity)*		Acid	Amine	Yield (%) (% Purity)**
1	Benzoic acid	N,O- dimethylhydroxylamine hydrochloride	98.8 (95.5)	1	Benzoic acid	Benzenesulfonamide	95.5 (71.3)
2	<i>t</i> -Cinnamic acid		87.3 (94.7)	2		Methanesulfonamide	78.8 (53.1)
3	2-Nitrobenzoic acid		99.5 (93.2)				

* Determined by GC-FID. ** Purity was determined by GC-FID (the purity obtained is lower than in the previous synthesis because scavenging step using Silia*Bond* Amine, to eliminate the acid in excess, hasn't been done).

In this particular example, the Silia*Bond* Carbodiimide was used as the coupling reagent, followed by Silia*Bond* Carbonate to remove HOBt (the catalyst). As TFA salt of the amide was formed by the removal of the Boc protecting group, Silia*Bond* Carbonate was used a second time to remove it. Yields in the above figure refer to the mass of isolated product and purity is determined by GC-FID. For more details, see [Appn_SB012-0](#).



Amine Free Basing

Supported sulfonic acids are in a class of strong acids (*pKa* < 1) widely used in different fields of synthetic organic chemistry. Their applications are very well-known in a large number of settings, from drug discovery laboratories up to manufacturing processes. Among these applications are: acid catalysts, stationary phases for ion chromatography, basic impurity scavengers and they are very useful for more specific organic synthesis applications, like amine free basing and Boc group deprotection. Their most common use is probably as a strong cation exchanger (SCX) for the “Catch and Release” purification of amines in SPE cartridges. For more details, see [Appn_SP004-0](#).

Procedure - Tonic Acid (SCX) and Propylsulfonic Acid (SCX-2) in SPE cartridges

Catch and Release of Amines with SCX and SCX-2	
Cartridges used	Silia <i>Prep</i> Tonic Acid (SCX) 6 mL / 500 mg (SPE-R60530B-06P) Silia <i>Prep</i> Propylsulfonic Acid (SCX-2) 6 mL / 500 mg (SPE-R51230B-06P)
Samples	Amine (1 equiv) dissolved in methanol (2,500 ppm)
Conditioning step	6 mL of methanol
Loading step	Samples slowly aspirated through the cartridges
Washing step	6 mL of methanol (1 mL/min)
Elution step	6 mL of 2 M ammonia / methanol

Results

Catch and Release of Amines with SCX and SCX-2											
Amine	pKa	Catch (%)		Release (%)		Amine	pKa	Catch (%)		Release (%)	
		SCX	SCX-2	SCX	SCX-2			SCX	SCX-2	SCX	SCX-2
4-nitroaniline	0.98	98	97	100	100	Benzylmethylamine	9.58	100	100	100	97
Aniline	4.62	100	100	95	96	Cyclohexylamine	10.64	100	96	95	96
4-methoxyaniline	5.29	100	100	100	100	Tributylamine	10.75	100	100	100	98
Morpholine	8.36	100	100	100	89	Quinuclidine	11.00	100	100	94	98

Although the aromatic ring of the Tonic Acid makes it slightly more acidic than Propylsulfonic Acid, these studies demonstrate that they have comparable strength. In fact, the difference between the two products is mainly in the selectivity.

HOBt Scavenging

The use of functionalized silica greatly simplifies not only organic synthesis but also purification. In some cases, the work-up is reduced to a simple filtration and evaporation of the solvent. As demonstrated by the examples below, Silia*Bond* Carbonate could play a key role in further simplifying the work-up in amide coupling reactions. For more details, see [Appn_SB012-0](#).

Procedure - Silia*Bond* Carbonate in bulk

HOBt Scavenging - Bulk	
1	Add 2 - 4 equivalents of Silia <i>Bond</i> Carbonate to the HOBt solution (in DMF)
2	Stir for 1 hour at room temperature
3	Remove the Silia <i>Bond</i> carbonate by filtration and rinse with DMF
4	Solvent evaporation gives the HOBt free solution

Procedure - Silia*Bond* Carbonate in SPE cartridges

HOBt Scavenging - SPE Cartridges	
Conditioning step	1 x CV of DMF
Loading step	Load the HOBt solution
Rinsing step	1 x CV of DMF

Note: CV = Column Volume

Results

Scavenging with Silia <i>Bond</i> and Silia <i>Prep</i> Carbonate									
Number of Equivalents	Product	Reaction Time (min)	Final HOBt Conc.* (ppm)	Scavenging Yield (%)	Number of Equivalents	Product	Reaction Time (min)	Final HOBt Conc.* (ppm)	Scavenging Yield (%)
3	Silia <i>Bond</i>	5	32	99.4	4	Silia <i>Bond</i>	5	22	99.6
		60	32	99.4			60	21	99.6
	Silia <i>Prep</i>	-	< 5	> 99.9		Silia <i>Prep</i>	-	< 5	> 99.9

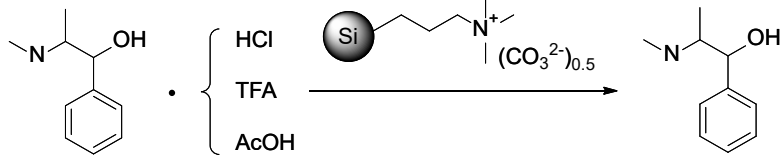
* Determined by GC-MS. Initial HOBt concentration: 5,000 ppm in DMF.

TFA Removal

Trifluoroacetic acid (TFA) is certainly the most commonly used ion-pairing agent for the separation of peptides in reversed-phase ion-pairing chromatography. This is due to TFA being a volatile solvent and therefore easier to remove, having low absorption within detection wavelengths and its effectiveness is well established.

The role of TFA is to act as a buffer (*keeping the charge on the analyte and avoiding precipitation*), to impart some hydrophobicity to the amino groups, and to neutralize cationic charges.

Usually after HPLC separation and evaporation of the solvent, the peptide is isolated in its TFA salt form and it is well-known that peptides stored this way exhibit reduced stability. Hence it is necessary to use a method to freebase the peptides prior to their storage. The use of SiliaBond Carbonate was investigated in the following study as an efficient and convenient solution to this problem. For more details, see [Appn_SB012-0](#).



SPE Cartridges Packed With SiliaBond Carbonate

Non-retentive SPE (*Catch and Release*) allows peptides to be eluted directly during the loading and rinsing steps (*i.e., won't be retained on the sorbent*) while the TFA remains in the SPE cartridge.

Procedure

Catch and Release of the Analyte	
Conditioning step	1 x CV of THF
Loading step	Load the amine solution (<i>in THF</i>)
Rinsing step	1 x CV of THF

Note: CV = Column Volume

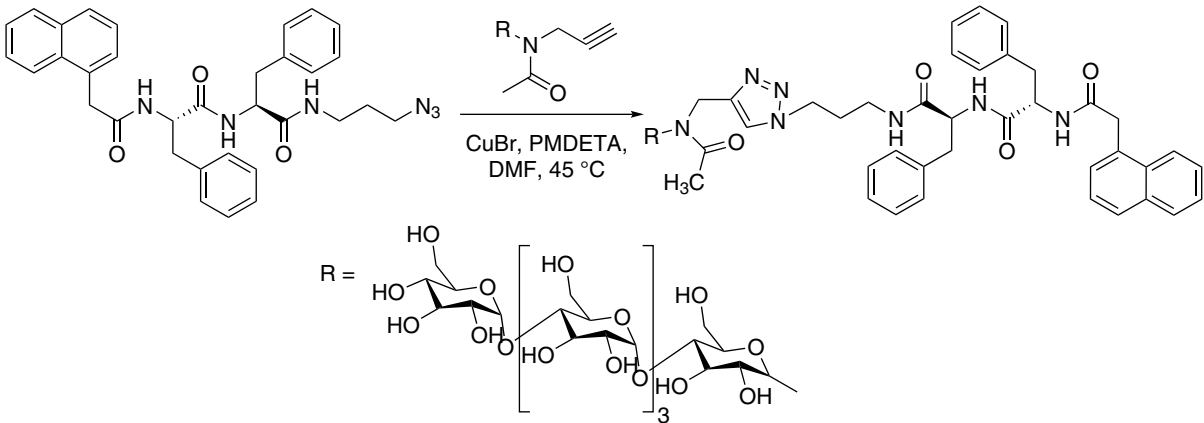
Results

Salt Removal Using SiliaPrep Carbonate SPE Cartridges			
Amine Salts		Yield ^A (%)	Purity ^B (%)
Ephedrine	HCl	98.7	94.4
	TFA	100	98.9
	AcOH	100	99.2

^A Yields refer to the mass of isolated product.
^B Purities determined by GC-FID.

Residual Metal Removal After a Catalytic Reaction

Nishimura's team at Shinshu University synthesized supramolecular hydrogels (*i.e. cross-linked fiber networks that swell*) encapsulated with enzymes. The biocatalytic supramolecular shear-thinning hydrogels are fabricated by self-assembly of amphiphilic carbohydrate-conjugated diphenylalanine derivatives. The amphiphilic glycopeptides are synthesized by a copper-catalyzed Huisgen reaction. Residual copper was scavenged using SiliaMetS Triamine (*r.t. in DMF, number of equivalent, reaction time, concentration of Cu before and after scavenging as well as scavenging yield are unknown*). For more details, see [CS_SM014-0](#).

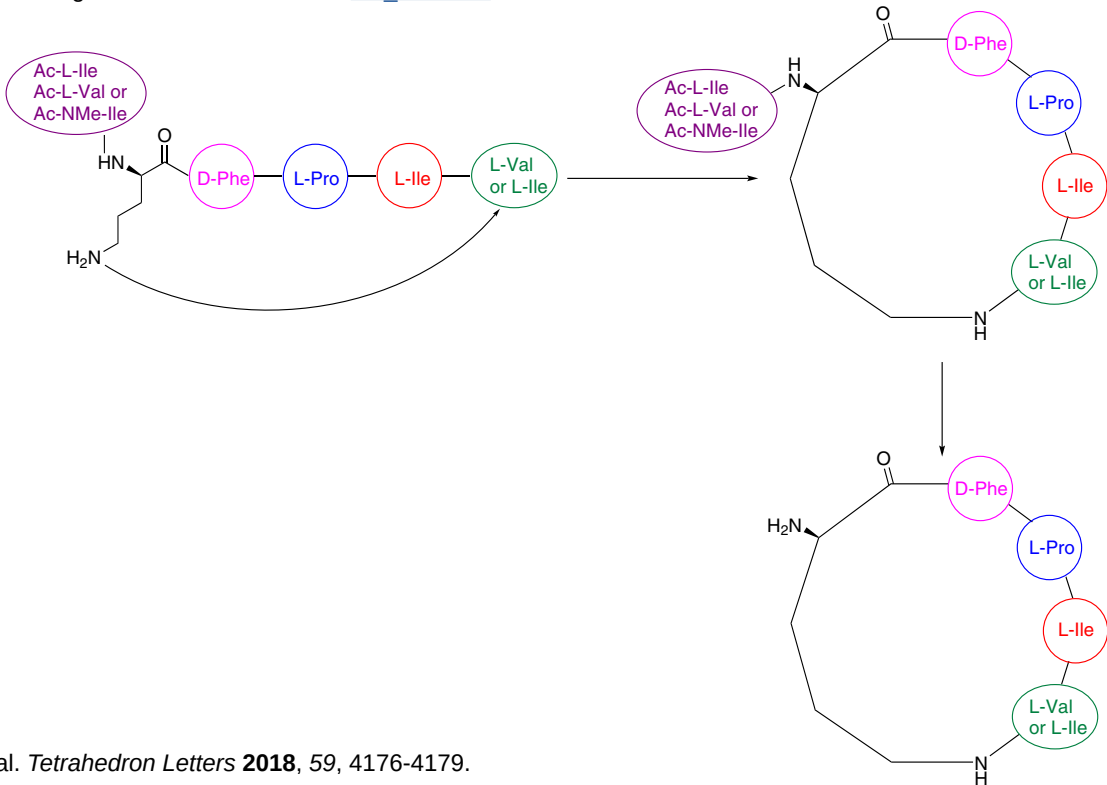


Sakamoto, Y. et al. *Langmuir* **2022**, 38, 5883-5890.

Peptide Purification by Flash Chromatography

Voyer's team reported the first total synthesis of the cycle-tail peptides known as pseudacyclins A-E with high overall yields. The strategy was based on the use of orthogonally protected ornithine that yielded protected-cyclic peptides that were later hydrogenolyzed to give the exocyclic amines. The hydrogenolysis step of these types of syntheses is usually purified by HPLC, and the purification is long, tedious, and gives poor yields. Voyer's team developed a powerful normal-phase method for rapid separation of the monomers from the dimers using SiliaSep PREMIUM Spherical Flash Cartridges obtaining yields from 52 to 56 % with a purity of 98 to 99 %. The chromatographic conditions are reported on the right. For more details, see [CS_SS002-0](#).

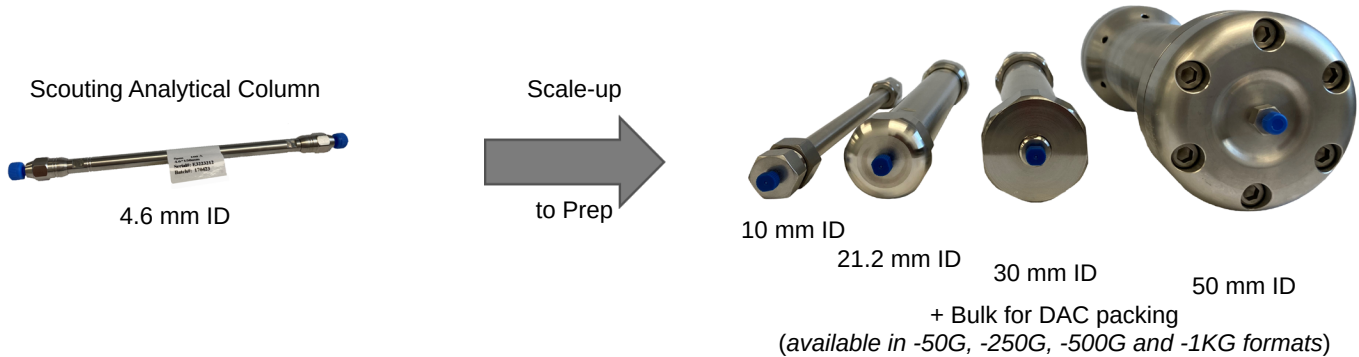
Chromatographic Conditions	
Parameter	Value
Cartridge	SiliaSep PREMIUM Flash Cartridge, Silica-Based, 25 µm, 90 Å
Part Number	FLH-10095D-A-ISO40
Gradient	Linear Gradient 100 % dichloromethane to 80:20 dichloromethane:methanol (19 CV)
Flow Rate	25 mL/min



Bérubé, C. et al. *Tetrahedron Letters* **2018**, 59, 4176-4179.

Peptide Purification by Preparative HPLC and DAC

In large scale purification using high pressure chromatography, it is paramount to first screen & scout analytical columns and then be able to scale-up using prep columns of the same silica (*phase and particle size*). Columns are available in analytical dimensions (4.6 mm ID) and preparative dimensions (10, 21.2, 30, and 50 mm ID). In addition, bulk silica is also offered to allow DAC packing, giving the purification scientist even more options.



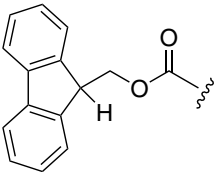
Other Applications

Trap-Elute of Polar Peptides

Silia*Prep* SPE cartridges packed with C18 Widepore (*WPD*, 125 Å) can be used for trap-elute of relatively polar peptides after cleavage or cysteine oxidation.

Fmoc Deprotection of Peptides

Silia*Bond* Piperazine (*Si-PPZ*) is a useful deprotecting and scavenging agent for Fmoc and Bsmoc amino protecting groups and as a solid-phase Knoevenagel catalyst.



Removal of Residual Azide

Silia*Bond* Cyano can be useful to remove residual azide (*starting material*) after a click reaction.

Ordering Information

Bulk Irregular Silica Gels

Our silica gels are available from 5 g up to 25 kg. All Particle Size and Pore Size are respectively 40 - 63 µm, 60 Å for these products. To build your own product number, just add the Format to the Phase PN: **[Phase PN]**-**[Format Code]**
Example: 100 g of Thiol silica gel, 40 - 63 µm, 60 Å: **R51030B-100G**

Reagents and Organic Scavengers	
Product Names	Phase PN
Silia <i>Bond</i> Carbodiimide	R70530B
Silia <i>Bond</i> Ethyl Carbodiimide	R70630B
Silia <i>Bond</i> Piperazine	R60030B
Silia <i>Bond</i> Carbonate	R66030B
Silia <i>Bond</i> Cyano	R38030B
Silia <i>Bond</i> Tosic Acid (SCX)	R60530B
Silia <i>Bond</i> Propylsulfonic Acid (SCX-2)	R51230B

Metal Scavengers	
Product Names	Phase PN
Silia <i>MetS</i> Thiol	R51030B
Silia <i>MetS</i> DMT	R79030B
Silia <i>Bond</i> Amine	R52030B
Silia <i>MetS</i> Triamine	R48030B
Silia <i>MetS</i> Cysteine	R80530B
Silia <i>MetS</i> DOTA	R91030B
Silia <i>MetS</i> Imidazole	R79230B
Silia <i>MetS</i> TAAcOH	R69030B
Silia <i>MetS</i> TAAcONa	R69230B
Silia <i>MetS</i> Thiourea	R69530B

Bulk Spherical Silica Gels

The table below presents the most popular Silia*Sphere* bonded phases available from SiliCycle.
To build your own product number, just add the Particle and Pore Size Code to the Phase Code: **[Phase]**-**[Particle and Pore]**
Example: **S03205E-A** for a C18 silica gel, 5 µm, 100 Å

Siliasphere Phase Codes	
Phase	Phase Code
C18	S032
C8	S308
Cyano	S380
Silica	S100

Siliasphere Particle and Pore Size Codes				
Particle Size	Pore Diameter			
	60 Å	100 Å	300 Å	1,000 Å
3 µm	03B	03E-A	03M	-
5 µm	05B	05E-A	05M	-
10 µm	07B	07E-A	07M	07T

Packed in Cartridges

Silia*Prep* SPE Cartridges and Silia*Sep* Flash Cartridges

To build your SPE or Flash Cartridge Product Number, simply start with the **Prefix SPE** or **FLH**, followed by the **Phase PN of the silica gel** you wish your cartridge to be packed with, followed by the **Format code**.

- Examples:
- Silia*Prep* Cyano, 6 mL, 500 mg = **SPE-R38030B-06P**
 - Silia*Sep* Open-Top Carbonate, 70 mL, 10 g = **FLH-R66030B-70Y**
 - Silia*Sep* Thiol, 4 g = **FLH-R51030B-ISO04**

Siliasprep SPE and Siliasep OT Cartridges			
Formats available	Prefix	Code	Units / Box
3 mL / 200 mg	SPE	03G	50
3 mL / 500 mg	SPE	03P	50
6 mL / 500 mg	SPE	06P	50
6 mL / 1 g	SPE	06S	50
6 mL / 2 g	SPE	06U	50
12 mL / 2 g	SPE	12U	20
25 mL / 5 g*	FLH	20X	20
70 mL / 10 g*	FLH	70Y	16
70 mL / 15 g*	FLH	70i	16
70 mL / 20 g*	FLH	70Z	16
150 mL / 25 g*	FLH	95K	10
150 mL / 50 g*	FLH	95M	10
150 mL / 70 g*	FLH	95N	10



Siliasep Flash Cartridges			
Formats available	Prefix	Code	Units / Box
4 g	FLH	ISO04	2
12 g	FLH	ISO12	1
25 g	FLH	ISO25	1
40 g	FLH	ISO40	1
80 g	FLH	ISO80	1
120 g	FLH	IS120	1
220 g	FLH	IS220	1
330 g	FLH	IS330	1
800 g	FLH	IS750	1
1,600 g	FLH	I1500	1

* Commercialized under Silia*Sep* OT branding.

Silia*Chrom* Plus HPLC Columns Ordering Information

How to build your PN for HPLC Column: **HPLC-[Phase]**-**[Format]**
Example: HPLC-**S03203E-A-N150** for a Silia*Chrom* Plus C18, 3 µm, 4.6 x 150 mm HPLC column

Phase Codes

SiliaChrom Plus Phase Codes			
Phase	Particle Size		
	3 µm	5 µm	10 µm
C18	S03203E-A	S03205E-A	S03207E-A
C18-300	S03203M	S03205M	S03207M
C8	S30803E-A	S30805E-A	S30807E-A
C8-300	S30803M	S30805M	S30807M
Silica	S10003E-A	S10005E-A	S10007E-A
Silica-300	S10003M	S10005M	S10007M
Cyano	S38003E-A	S38005E-A	S38007E-A

Format Codes

HPLC Column Format Codes					
Dimension	Qty/box	Code	3 µm	5 µm	10 µm
4.6 x 50 mm	1	N050	✓	✓	
4.6 x 100 mm	1	N100	✓	✓	
4.6 x 150 mm	1	N150	✓	✓	✓
4.6 x 250 mm	1	N250	✓	✓	✓
10 x 150 mm	1	Q150		✓	✓
10 x 250 mm	1	Q250		✓	✓
21.2 x 150 mm	1	T150		✓	✓
21.2 x 250 mm	1	T250		✓	✓
30 x 150 mm	1	V150		✓	✓
30 x 250 mm	1	V250		✓	✓
50 x 150 mm	1	W150			✓
50 x 250 mm	1	W250			✓

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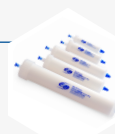
METAL AND ORGANIC SCAVENGING

SiliaMetS® – Metal Scavengers
SiliaBond® – Organic Scavengers
E-PAK® – Fixed Bed Flow-Through Purification Cartridges



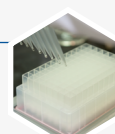
CHROMATOGRAPHY AND PURIFICATION

SiliaFlash® – Irregular Silica Gels | **SiliaSphere™ PC** – Spherical Silica Gels
SiliaBond® – Chromatographic Phases
SiliaSep™ – Flash Cartridges | **SiliaPlate™** – TLC Plates



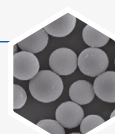
SAMPLE PREPARATION

SiliaPrep™ – Silica-based SPE Cartridges and Well Plates
SiliaPrepX™ – Polymeric SPE Cartridges and Well Plates



ANALYTICAL AND PREPARATIVE CHROMATOGRAPHY

SiliaSphere™ – Spherical Silica Gels
SiliaChrom® – HPLC Columns



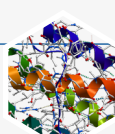
ORGANIC SYNTHESIS

SiliaBond® – Reagents and Oxidants
SiliaCat® – Heterogeneous Catalysts



PEPTIDE SYNTHESIS

Peptide Synthesis and Purification Solutions
Amine Free Basing and TFA Removal



R&D SERVICES

Metal and Organic Scavenging Screenings | Organic Synthesis
Chromatography and Purification | Material Science
Method Development, Optimization, and Transfer



Technical Support

At SiliCycle, we are committed to providing the best technical support possible.

Our worldwide Technical Support Group of highly qualified M. Sc., Ph. D. Chemists and Engineers will answer your questions and provide solutions to your most advanced chemistry and purification needs. Contact us at support@silicycle.com or call us.



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