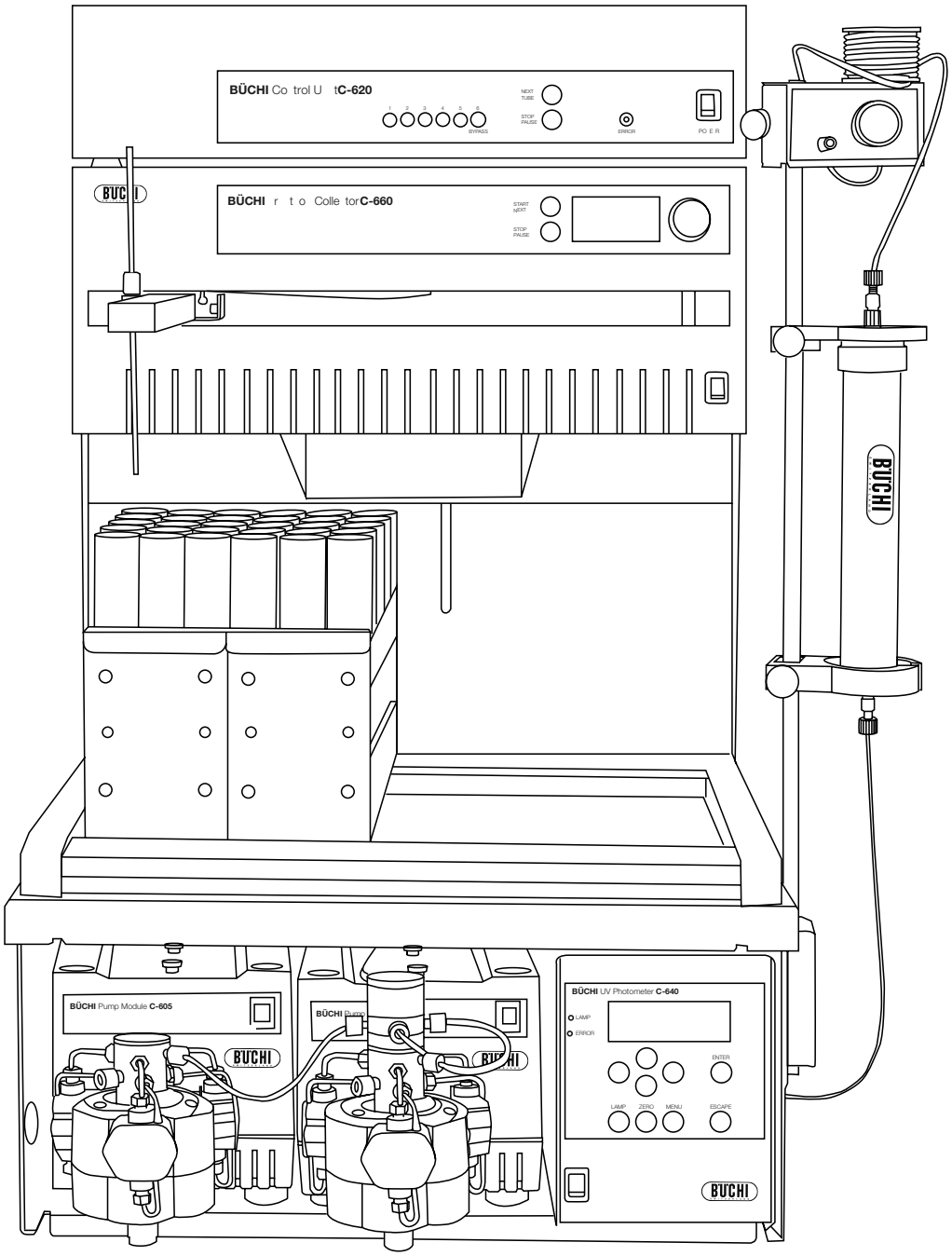
Sepacore® X10 / X50 system
Technical data sheet

Sepacore® X10 and X50 flash chromatography systems address most requirements for the purification of organic compounds. Whether a crude synthesis mixture or a plant extract has to be purified, the system offers optimal performance and scale-up capability.



Scope of delivery

Components	X10	X50
C-601 Pump	2	-
C-605 Pump	-	2
C-660 Fraction Collector	1	1
Set racks FC30	4	4
C-620 SepacoreControl package	1	1
Glass tubes 50 mL	20	20
Waste diverter valve	1	1
Chromatography table	1	1
Injection unit single	1	1
Sample Loop 20 mL	1	1
Detector C-640	1	1
Cartidge holder cpl.	1	1
Set Luer Adapter male/female	1	1

Order code

System
70 X10 system
60 X50 system

Technical data

Dimensions (W × H × D)	550 × adjustable from 488 to 578 × 550 mm
Weight	about 36 kg
Pressure range X10 X50	 Up to 10 bar (145 psi) Up to 50 bar (725 psi)
Flow rate range	2.5 – 250 mL/min
Flow rate accuracy	+/- 2 % of the set flow rate
Reproducibility	+/- 0.5 % of the set flow rate
Peak detection	Up to 8 detectors channels (4 analog, 4 digital)

Fraction collector C-660

Collection area (W x D)	440 mm x 350 mm
Interface	2 × RS485 1 × RS-232 (process data output) 1 × Mini-DIN (waste valve) 1 × Mini-DIN (TTL In / alarm monitoring and/or ext. start) 1 × Mini-DIN (level sensor for waste container) 2 × Analog ports (detector signal input) 2 × Analog ports (for chart recorder)
Compatible racks	4 × FC60: 4 × (60 × 20 mL tubes) 4 × FC30: 4 × (30 × 50 mL tubes) 4 × FC12: 4 × (12 × 250 mL tubes) Syncore racks (R4, R6, R12, R24, R48, R96) Customized racks
Connection voltage	100 – 230 V ± 15 %
Fuse	T500 mA L 250 V
Frequency	50 / 60 Hz
Power consumption	max. 25 W
Degree for protection	IP20
Overvoltage category	II
Pollution degree	2

Pump C-601 / C-605

Gradient	Binary
Pump type	Radially arranged 3 – piston pump
Pump head	Integrated piston back flushing
Function	3 – piston pump chemically inert and biocompatible
Material in contact with solvent	PEEK, sapphire, ceramic, FEP, ruby, PTFE
Interface	4 x RS485
Connection voltage	100 – 230 V ± 15 %
Frequency	50 / 60 Hz
Power consumption	max. 75 W
Degree for protection	IP20
Overvoltage category	II
Pollution degree	2

Detector C-640

Wavelength range	200 – 840 nm (256 elements on CCD)
Typical spectral half width	10 nm
Accuracy of adjustment	± 1 nm
Reproducibility	± 0.5 nm
Noise level at test cell	± 5 × 10-5 AU at 254 nm, TC 0.75 s
Drift at test cell (254 nm after 1 h)	1 × 10-3 AU/h
Time constant (T90)	0.5 s ; 0.75 s; 1 s or 2 s
Light source	Deuterium discharge lamp / halogen lamp
Maximum flow rate	500 mL/min
Maximum pressure at the cell	20 bar / 290 psi
Output for integrator	1 V/AU (in digital form only)
Interface	1 x RS-232 4 x Analog ports (detector signal output)
Connection voltage	100 – 240 V ± 15 %
Fuse	2.5 A / 250 V
Frequency	50 / 60 Hz
Power consumption	max. 90 W
Degree for protection	IP20
Overvoltage category	II
Pollution degree	2

Control unit C-620

Connection voltage	100 – 240 V ± 15 %
Fuse	T 8A L 250 V
Frequency	50 / 60 Hz
Power consumption	max. 30 W
Degree for protection	IP20
Overvoltage category	II
Pollution degree	2

Interface	2 × RS485 2 x column selection valve ports 4 × RS-232 4 × Analog ports (detector signal input) 1 x USB 1 x waste level sensor port 1 x Pressure sensor port 2 x TTL In/Out ports 4 x Solvent level sensor ports 2 x Solvent valve ports

Software system requirements

The PC must fulfill the following requirements:

Operating System	Windows 7 or 8 Professional / Ultimate / Enteprise (32-bit or 64-bit)
Central Processing Unit	Dual Core 2.4 GHz or faster
RAM	2 GB or more
Harddisk	> 15 GB of free harddisk
Display resolution	1280 × 1024 (minimum 1024 × 768)
Interface	USB 1.1 or higher
Others	DVD-ROM drive

Languages

SepacoreControl software	en / de / fr

Firmware version

Pump Module C-601/5	3.0 and 3.4
Fraction Collector C-660	1.12
UV-Vis Detector C-640	2.29

Environmental condition

Temperature	5 - 35 °C for indoor use only
Altitude	up to 2000 m
Humidity	maximum relative humidity 80 % for temperature up to 31 °C, lineary decreasing to 50 % at 40 °C

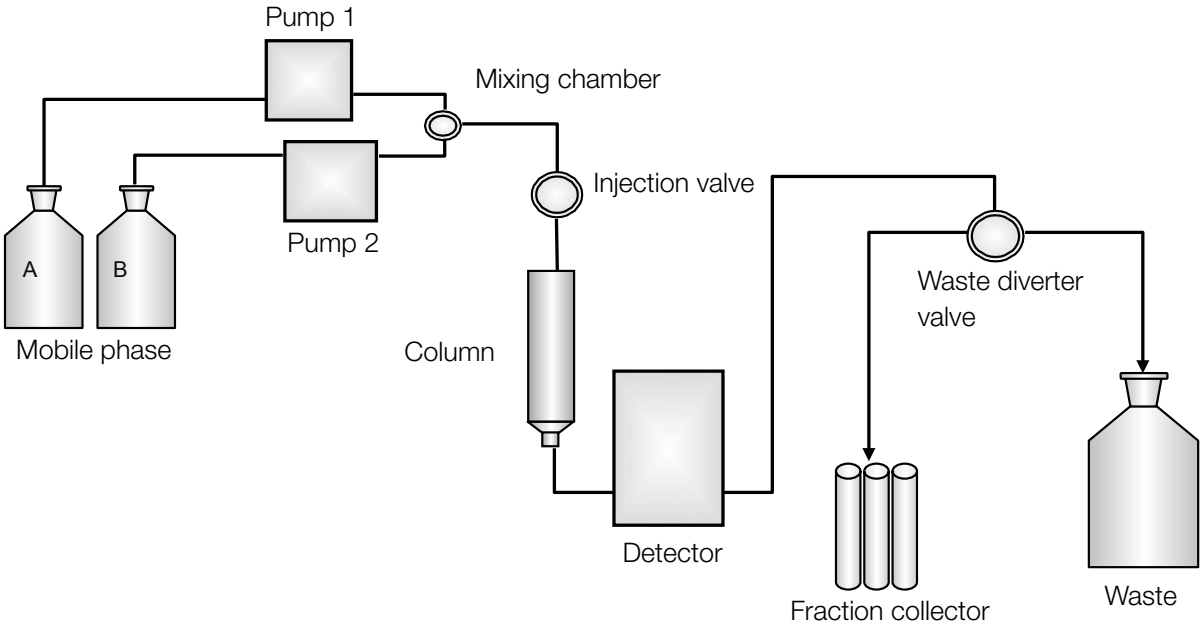
Accessories

	Order number
ELS Detector C-650	11059106
Waste level sensor	044336
4 Racks FC 12	044957
4 Racks FC 60	044959
10 × glass tubes 250 mL for FC 12	044960
100 × glass tubes 20 mL for FC 60	044962
Monitor holder	054291
Solvent valve	044854

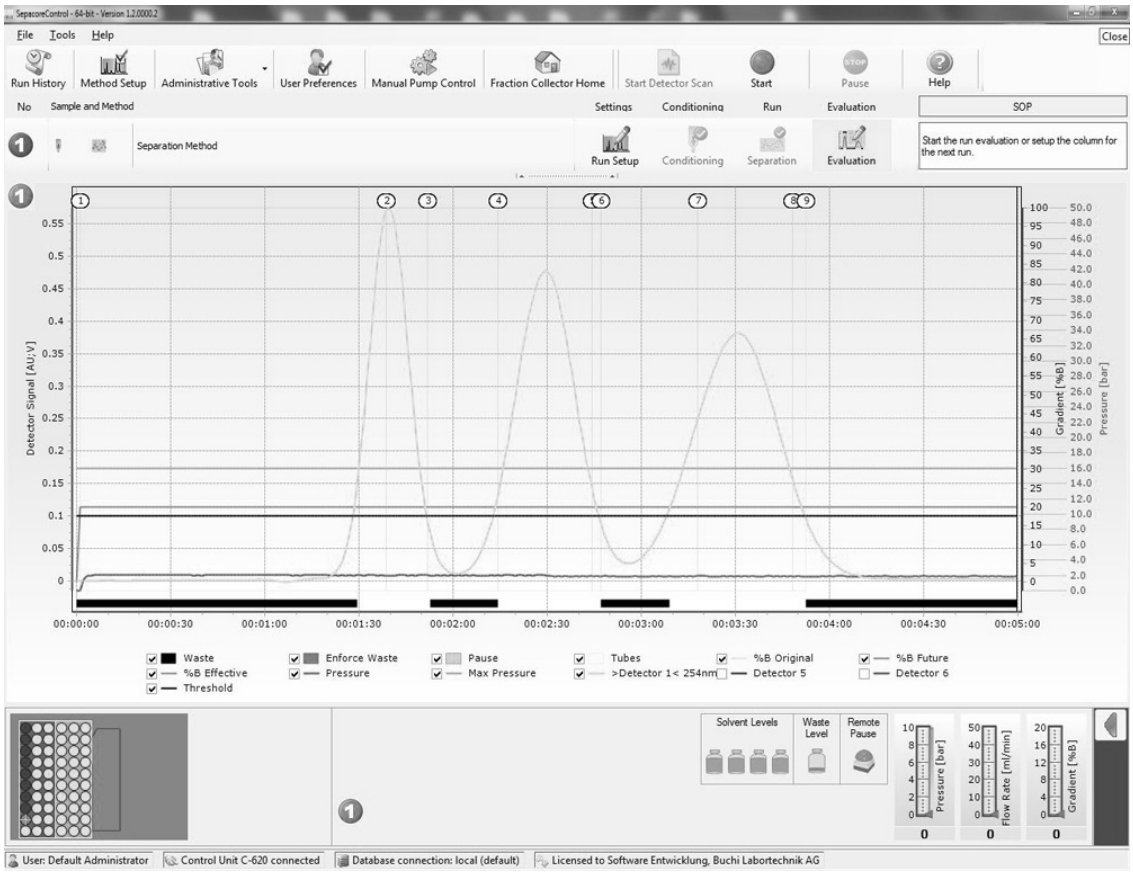
Functional principle

The two pump modules 1 and 2 enable the formation of a binary gradient. Solvents (A and B) enter the pump heads via the aspiration tubing (input). The solvents are then pumped to the mixing chamber with integrated pressure sensor. The mixed solvent is pumped to the injection valve then on to the column.
The 6-way injection valve gives the possibility to load a sample loop or other injection accessories. The UV detector C-640 provides the system with information on the light absorbance of the solvents and samples passing through the detector flow cell. The instrument can measure the change of the absorption behavior of a sample at four selected wavelengths in a range from 200 to 840 nm.

After the detection of the signal (chromatogram), the eluent at outlet of the column (peaks) can be collected as fractions on the fraction collector. The waste valve allows the choice between collection and waste and minimizes the number of tubes needed.



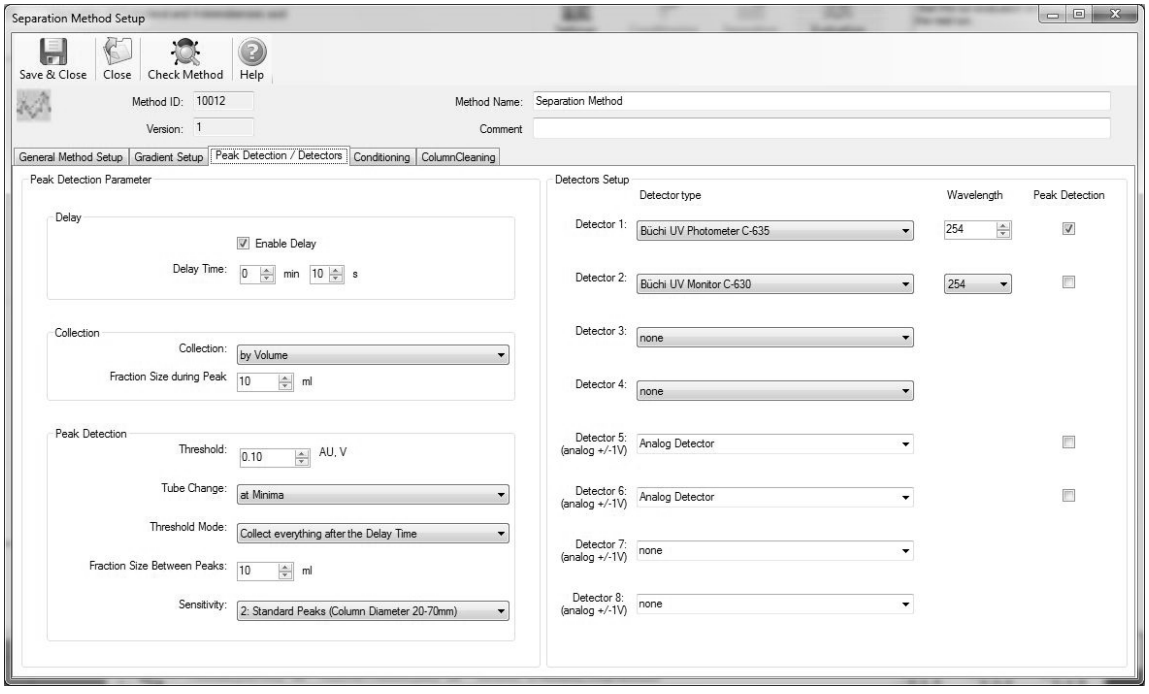
All parameters of a chromatographic run will be recorded automatically in a database. Multiple user definable features, such as peak tracking, the ability to combine fractions, add comments and create reports. The SepacoreControl allows the configuration of personal flow charts and report schemes. The SepacoreControl database can be installed at a local PC (standard installation) or at an external server (network installation).



Main functions

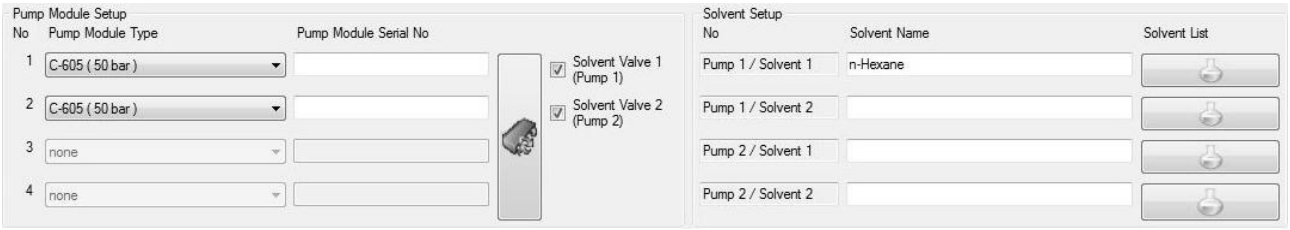
Multichannel peak detection

Determines the detector or channel used for peak detections. Multiple choices are possible. You can use max. 8 detector channels at the same time for peak detections.



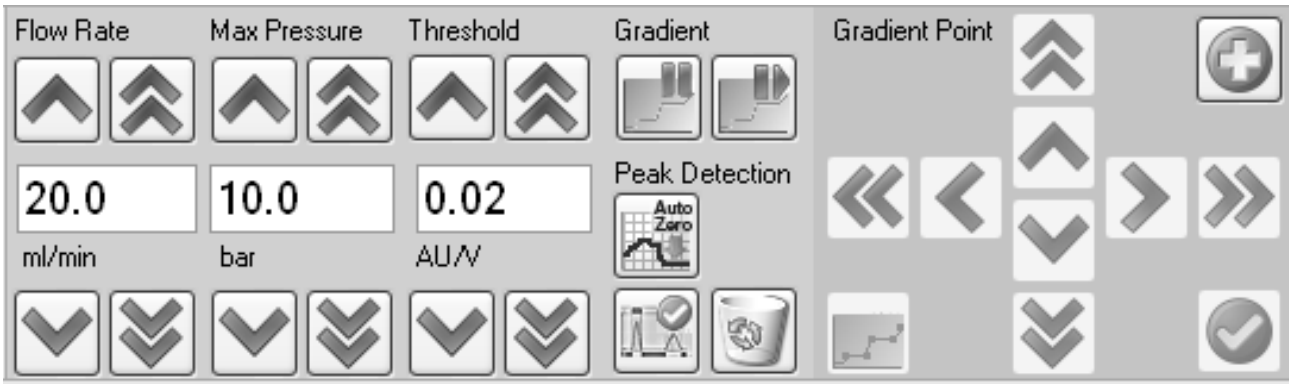
Binary gradients / 4 solvents

Using the solvent valve it is possible to select up to two solvents per pump



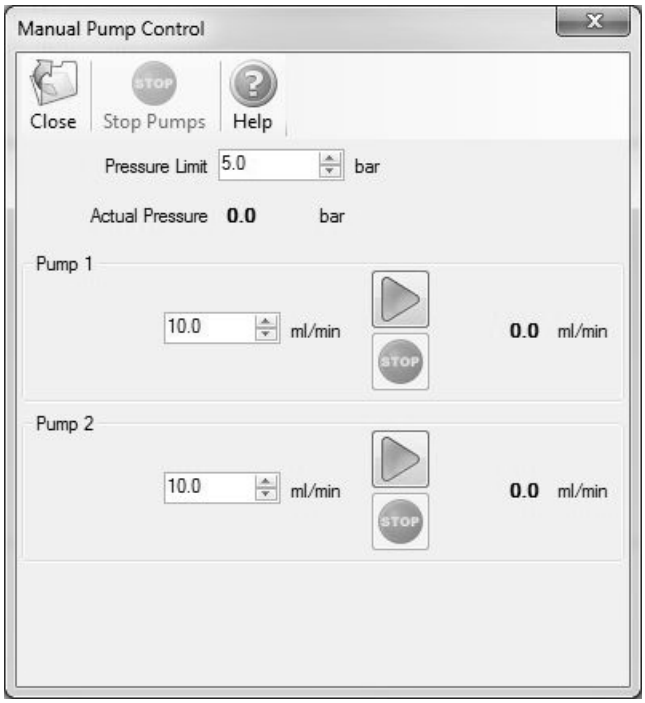
Change parameters on the fly

Most separation parameters can be adjusted during the run: flow rate, gradient composition, maximum pressure, threshold value for peak detection. It is also possible to deactivate / activate peak detection or to manually switch the fraction collector valve to waste



Manual pump control

The pumps of the Sepacore system can be controlled manually without programming a method. This helps to condition the system before a run e.g. by removing air or for fast solvent exchanges.

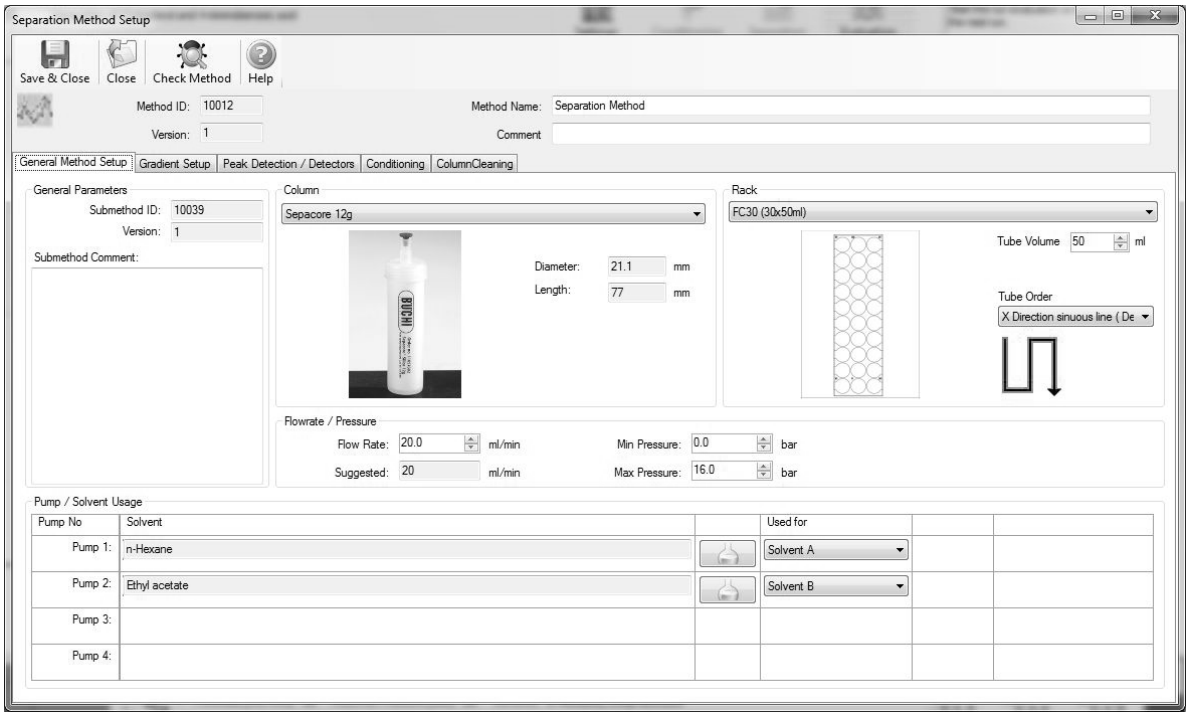


Method management

SepacoreControl allows simple method programming and management.
Steps to configure a typical method are:

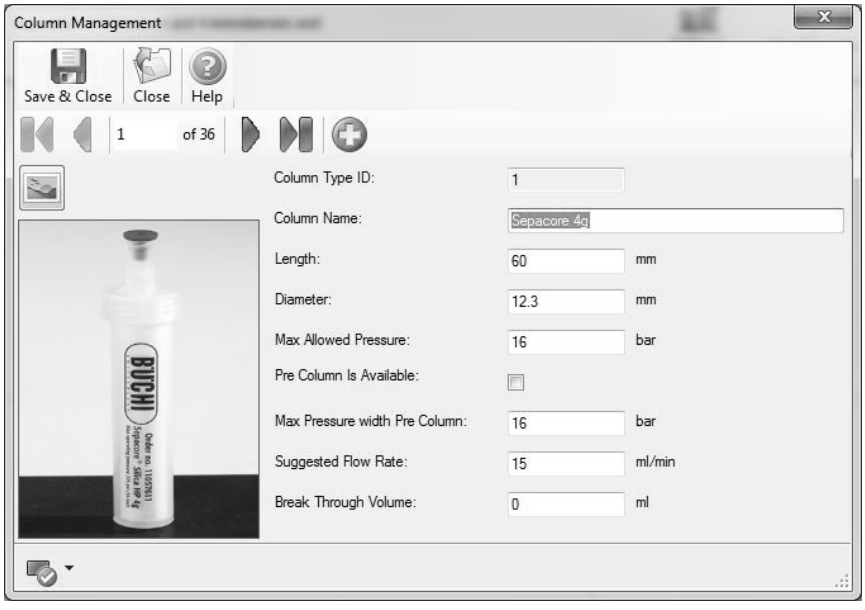
- Column conditioning
- Separation
- Column cleaning
- Purge

The purge step allows an automated solvent exchange within all the tubing e.g. when needed for changes from normal phase to reversed phase runs.



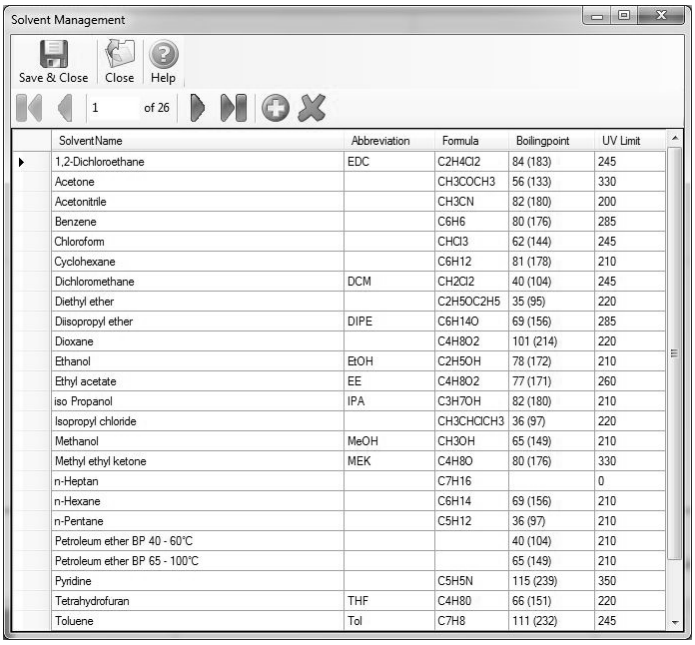
Column management

A database of column specifications, suggested flow rates and maximum pressure ratings for the wide range of BUCHI cartridges and columns. Other cartridges or columns can easily be added to the database.



Solvent management

A database of common chromatographic solvents and their parameters such as boiling point, UV limitations and abbreviations. Easily expandable with new solvents and solvent mixtures.



SolventName	Abbreviation	Formula	Boilingpoint	UV Limit
1,2-Dichloroethane	EDC	C2H4Cl2	84 (183)	245
Acetone		CH3COCH3	56 (133)	330
Acetonitrile		CH3CN	82 (180)	200
Benzene		C6H6	80 (176)	285
Chloroform		CHCl3	62 (144)	245
Cyclohexane		C6H12	81 (178)	210
Dichloromethane	DCM	CH2Cl2	40 (104)	245
Diethyl ether		C2H5OC2H5	35 (95)	220
Diisopropyl ether	DIPE	C6H14O	69 (156)	285
Dioxane		C4H8O2	101 (214)	220
Ethanol	EtOH	C2H5OH	78 (172)	210
Ethyl acetate	EE	C4H8O2	77 (171)	260
iso Propanol	IPA	C3H7OH	82 (180)	210
Isopropyl chloride		CH3CHClCH3	36 (97)	220
Methanol	MeOH	CH3OH	65 (149)	210
Methyl ethyl ketone	MEK	C4H8O	80 (176)	330
n-Heptan		C7H16		0
n-Hexane		C6H14	69 (156)	210
n-Pentane		C5H12	36 (97)	210
Petroleum ether BP 40 - 60°C			40 (104)	210
Petroleum ether BP 65 - 100°C			65 (149)	210
Pyridine		C5H5N	115 (239)	350
Tetrahydrofuran	THF	C4H8O	66 (151)	220
Toluene	Tol	C7H8	111 (232)	245

Run evaluation

SepacoreControl offers multiple user definable features such as peak tracking, the ability to highlight fractions of interest and to add comments. User specific flow charts and records can be exported as PDF files.
Color coded tube recognition and tube numbering for quick location of the desired fraction.
Zoom in / out as well as taking snapshots to highlight important sections for professional reports.