

- **DMSO, DMF, WATER** can be evaporated with **NO BUMPING**
- Solvent removal directly from **HPLC / LC / GC vials**
- Sample concentration after fractionation, NMR measurement, etc.

# Smart Evaporator

MADE IN JAPAN

Over 1200 Units Sold Worldwide (2019)



In Vial Concentration



DMSO, DMF, Water



Bump Free Technology



Grand Prize

The 42nd Invention Award  
(the Japan Society for the Advancement of Inventions)



Grand Prize

The 7th Kanagawa "Industrial Navi Award"  
(Kanagawa Welfare Foundation for Entrepreneurs, Japan)



Award of Excellence

The 26th Small Business Excellence,  
New Technology / New Product Award  
(Resona Foundation / NK Industrial R.I., Japan)

## In Vial Concentration



The Spiral Plugs come in various sizes to fit to container mouth inner diameter from 4mm to 32mm. With the aluminum beads on the bottom\*, various sizes and shapes of tubes / vials are applicable for concentration.

Containers from other instruments or storage can be used directly, minimizing the loss by sample transfer (\*features for C1 and K4)



## DMSO, DMF, Water



The Smart Evaporator enables efficient evaporation of high-boiling point solvents - even DMSO, DMF, and water.

All models are with the heating function, and the covered models\* allow the use of inert gas, which accelerates faster concentration. (\*C1 and C10)

## Fast and Effecton Evaporation

Solvent / Capacity	Flow rate	40°C	70°C
Hexane / 5 ml (20 ml vial)	15L/min	3 min	3 min
Acetone / 5 ml (20 ml vial)	15L/min	4 min	3 min
Ethyl acetate / 5 ml (20 ml vial)	15L/min	6 min	5 min
Acetonitrile/ 5 ml (20 ml vial)	15L/min	9 min	8 min
Methanol / 5 ml (20 ml vial)	15L/min	10 min	6 min
Ethanol / 5 ml (20 ml vial)	15L/min	10 min	6 min
*Deionized Water / 5 ml (20 ml vial)	29~30L/min	49 min	28 min
*DMF / 5 ml (20 ml vial)	20~30L/min	43 min	24 min
*DMSO / 5 ml (20 ml vial)	23~30L/min	195 min	69 min
*NMP / 5 ml (20 ml vial)	25~30L/min	N/A	71 min

\* Gas purge data

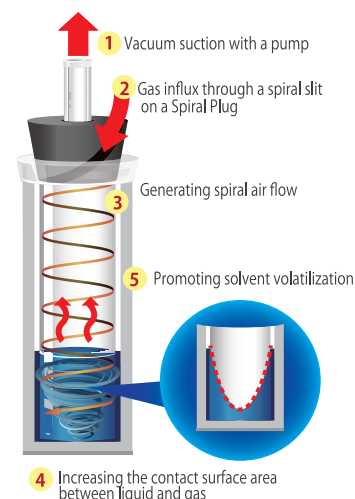
## Bump Free Technology



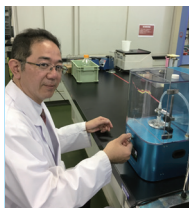
The novel Spiral Plug technology generates a helical flow of air over the surface of the solvent, thereby increasing the surface area.

Since the container isn't under high vacuum, there is no risk of bumping or splashing.

## Vacuum Vortex Concentration

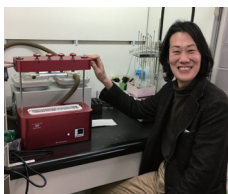


# Successful Applications with the Smart Evaporator



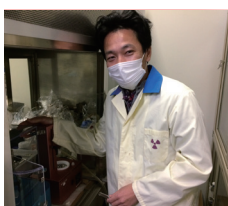
DMSO and DMF can be evaporated so easily and efficiently under 40°C - amazing!  
I'm also happy with the efficiency in the sample recovery.

- Dr. Matsufuji, Food Analysis, Nihon University



It is great being able to flexibly concentrate fractionated samples. No preparation time, each sample can be set when ready - we are saving a lot of time.

- Dr. Koyama, Food Chemistry and functional Nutrition, Tokyo University of Marine Science and Technology



Even the fraction container can be used for concentration.

The sample can be evaporated in the containers that we use, then directly injected into mice with a syringe.

We now plan the concentration during lunch break, and radioisotope with 2hours' half life can be efficiently tested.

- Dr. Hanaoka, Bioimaging Information Analysis, Gunma University

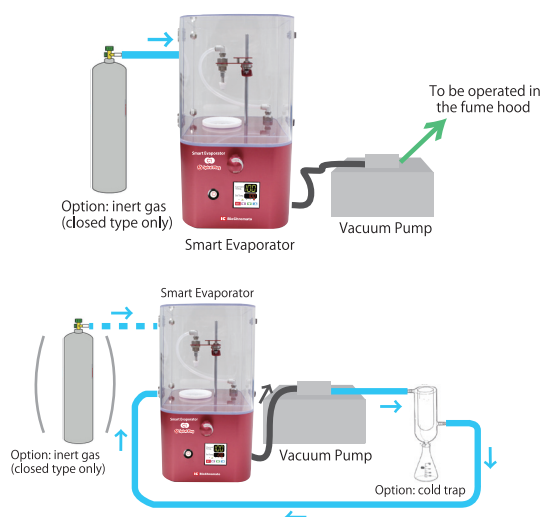
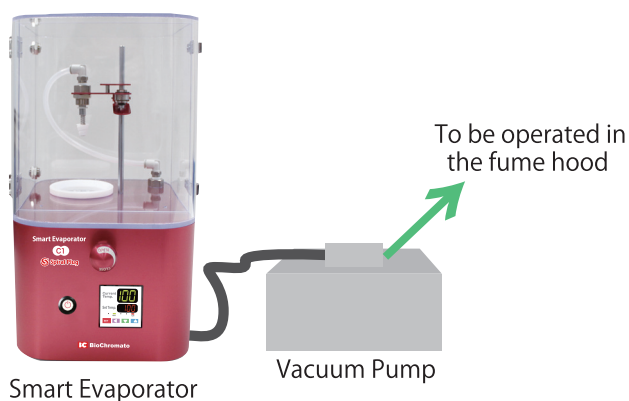
## Users' Fields

Bioimaging, Biomaterial, Chemical Biology,  
Chemical Bioscience, Molecular Biology,  
Nuclear Medicine, Forensic Medicine, Drug Assay,  
Organic Synthesis, Pharmacognosy,  
Archaeometry, Natural Products Chemistry,  
Nutritional Biochemistry, Food Analysis,  
Catalyst Chemistry, Surface Chemistry,  
Complex Chemistry, organic, Chemistry,  
Particle Chemistry, Material Chemistry,  
Metalorganic Chemistry, Analytical Chemistry,

## Application Examples

- Solvent removal (for substitution) after HPLC, LC/MS, GC/MS
- Sample concentration after preparative fraction
- Solvent removal after NMR measurement
- Concentration of natural product extract
- Concentration after solid phase extraction
- Concentration of radioisotope labeled compounds
- Concentration of surfactant solutions
- Pretreatment for multiple sample in drug analysis
- Pretreatment for analysis of photosynthetic pigment

## Installation example



# Smart Evaporator – models, accessories & specs

Smart Evaporator C1	
Model No.	CEV1B-SU / SQ / GR / SK
Size	W220 x D227 x H382 mm
Weight	4.3kg
Heating	Room temp. ~ 100C
Heating cup	Round shape / φ69mm
Color	4 (Sun, Squall, Grass, Sky)
Gas purge	Yes
CE marking	Yes



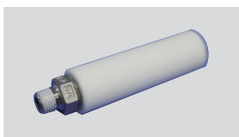
	Smart Evaporator K4	Smart Evaporator C10
Model No.	CEK4-SU-P (plug size 1-5)	CEV10L-(color)-P (plug size 1-3)
Size	W434 x D156 x H410mm	W350 (480) x D300 x H531 mm
Weight	4.8kg	20kg
Heating	Room temp. ~ 100C	
Heating cup	Rectangle / W226 x D55mm	Round shape / with vial holder
Color	1 (Sun)	4 (Sun, Squall, Grass, Sky)
Gas purge	No (special order possible)	Yes
CE marking	No	Yes



	Spiral Plug	Spiral Plug for Water
Model No.	SP-P (size No.)	SP-V (size No.)
Plug Material	PTFE	fluoroelastomer
Size No. (Inner φ of container)	1 (4~7mm)    2 (7~11mm)    3 (11~17mm)	4 (15~24mm)    5 (24~32mm)



Filter for C1	
Model No.	CEV-F-00
Size	L110 x φ26 mm
Connection	R1/4 (male)
Filter material	Polyethylene



4Kit for C1	
Model No.	UW4-C1B
Parts Included	4-channel head 3-Way Vial Holder 4 x SP-P1 4 x SP-P2 4 x 2ml Vial 4 x 4ml Vial 4 x 6ml Vial
One kit converts C1 to 4 position that accommodates vials of 3 sizes	



### Pump Information

All Smart Evaporators need to be connected to a DIAPHRAGM VACUUM pump for operation\*. The pump has to be capable of continuous suction at atmospheric pressure; and should reach the pressure of -40kPa (61.3 x 10<sup>3</sup> Pa) ~ -50kPa (51.3 x 10<sup>3</sup> Pa) or more.

The reference flow rate per plug size (= container mouth inner diameter) is as shown below. For multi-channel models, multiply the flow rate by the number of the channel.

\*Please contact us for more detail and recommendations.

Inner diameter of container	Plug Size	Reference suction flow rate
4~7mm	Plug Size:1	13L/min
7~11mm	Plug Size:2	15L/min
11~17mm	Plug Size:3	30~33L/min
15~24mm	Plug Size:4	50L/min
24~32mm	Plug Size:5	58L/min

No.02

■ Distributor

■ Manufacturer

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