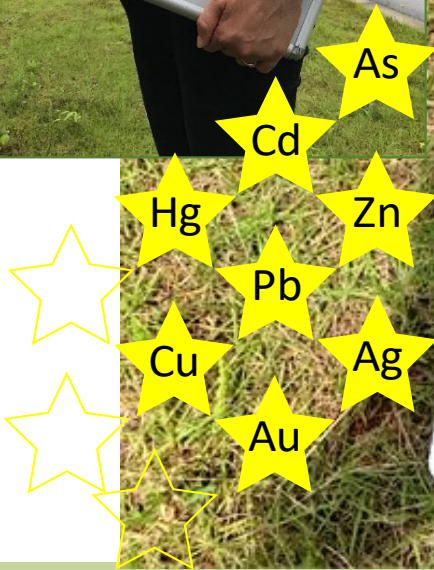


DEPSOR-M

for rapid and simultaneous testing of multiple heavy metals



- ★ **Rapid** electrochemical detection of heavy metals (5-10 min)
- ★ **Reliable** detection limit (sub-ppb or $\mu\text{g/L}$ levels)
- ★ **Affordable** (running cost <1 USD per sample)
- ★ **Easy-to-detect** with user-friendly PC-software
- ★ **Portable** & on-site analysis

The DEPSOR provide a portable, rapid, and cost-effective way of electrochemical detection of multiple heavy metals in environmental samples. The DEPSOR is powered by disposable screen-printed electrode chips (DEP chips) and compact PC software-controlled potentiostat which is originally designed and fabricated by our collaborator, BioDevice Tech., in Japan. The supplied software is user-friendly and offers the major electrochemical measuring techniques. These key features allows DEPSOR-M as the ideal tool for regular and in-house electrochemical monitoring of traces of heavy metal pollutants in drinking and food samples with easy.



Biyani BioSolutions Pvt. Ltd., INDIA



BioDevice Technology Ltd., JAPAN



Biyani BioSolutions company focuses on design and development of realistic (portable and affordable) solutions for point-of-care diagnostics and environmental monitoring to reach unreached communities and transform healthcare growth in developing countries. The company is ISO9001:2015 registered.

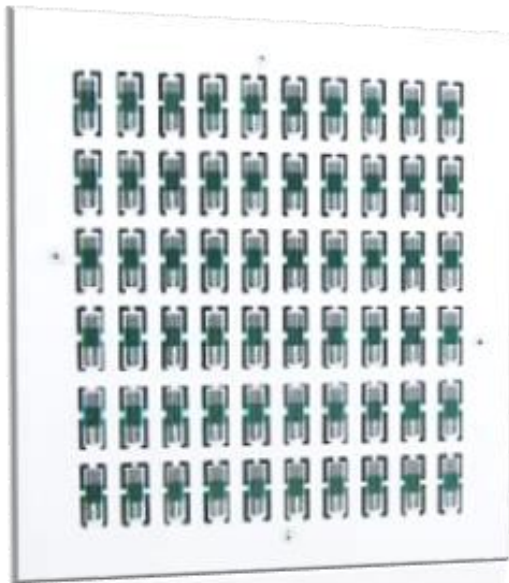
DEPSOR-M Components & Specifications

1 MiniSTAT100 Potentiostat



- ★ Potential range -2.000 ~ +2.000 V with a resolution of 2 mV
- ★ Supported 5 voltammetric techniques: CV, LSV, CA, DPV, SWV
- ★ Ultra-light weight (65 g)
- ★ Palm-sized (75×50×20 mm)
- ★ USB powered (with wireless use via Bluetooth-optional)
- ★ Shipped with easy-to-use software

2 DEP chips envelop (60 DEP-chips SP-N type)



Gold DEP (SR-N)



Carbon DEP (SP-N)

- ★ Screen-printed disposable electrode
- ★ Size 12.5mm×4mm×t 0.3 (2.64 mm² area of working electrode)
- ★ Mass productivity (60/sheet) and low-cost (<1 US\$)
- ★ High quality (CV <5%)
- ★ Easy-to-handle with long shelf-life

3 DEP chip holder



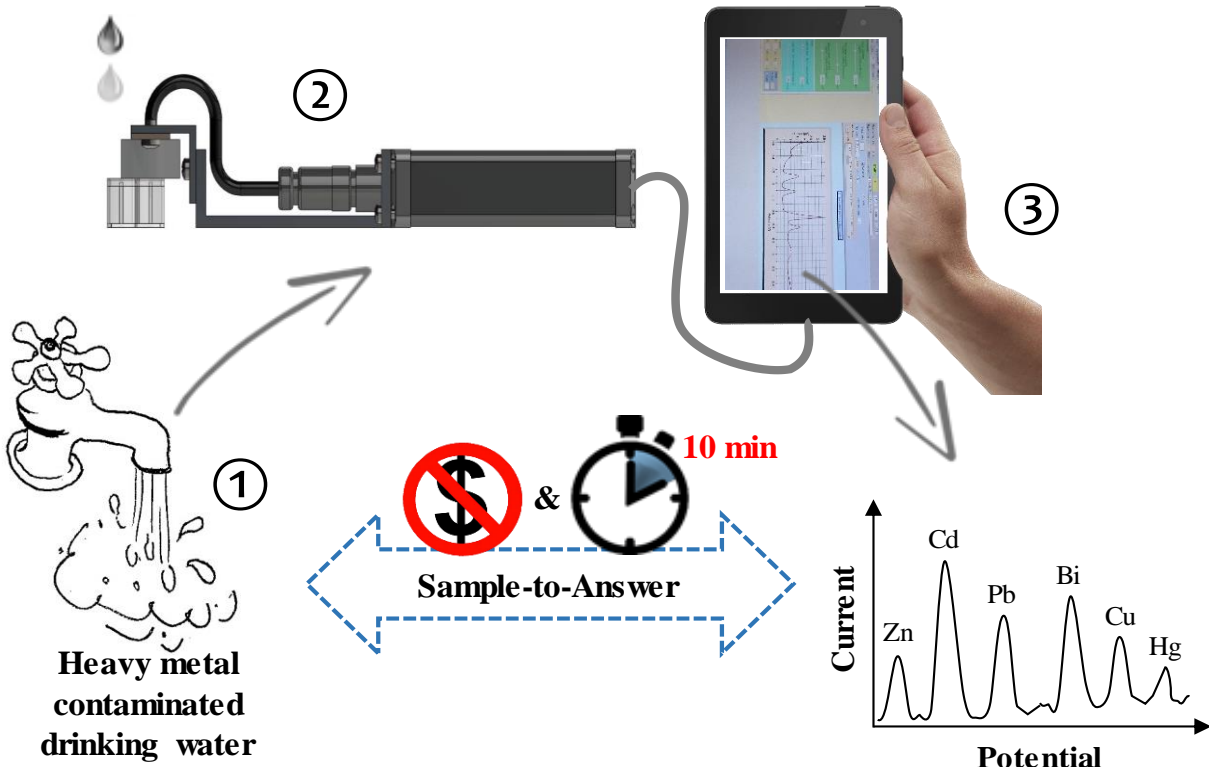
- ★ Low-volume sample (5 drops)
- ★ Simple & easy sample processing
- ★ Stable measurement

4 Windows Tablet with semi-automatic software KME ver.2

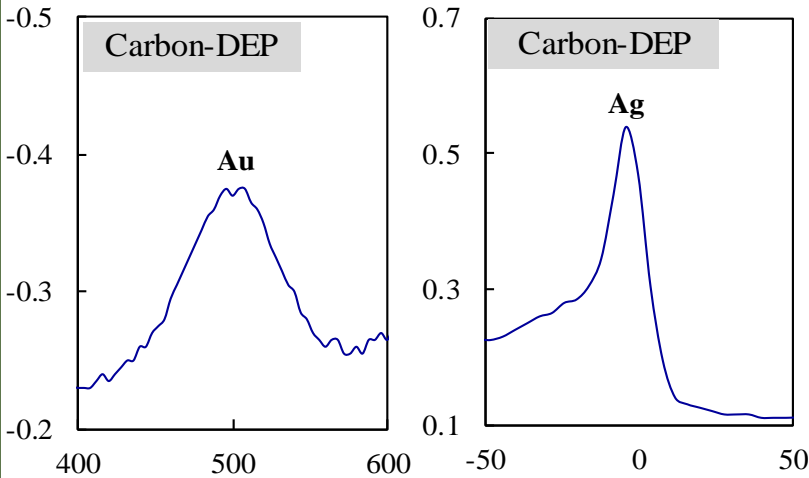
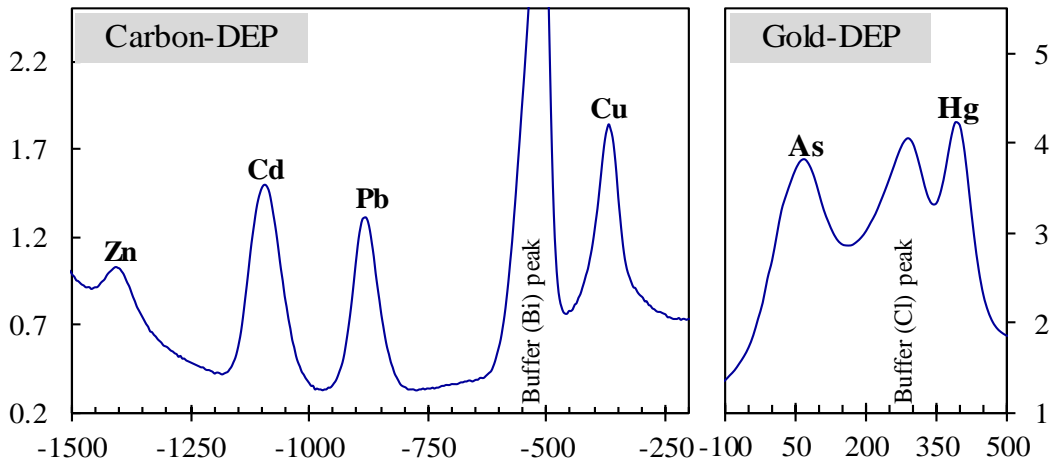
5 Electrolytes buffer solutions

6 Standard buffer solutions

Three Simple Operating Steps to Test heavy metal level in liquid samples



- 1) **Collect:** Mix sample with electrolyte buffer solution (in ratio of 1:1)
- 2) **Apply:** Add 5 drops sample in measuring cell
- 3) **Result:** Run KME software with optimized DPV parameters



DP voltammograms are shown for the detection of 100 ppb zinc, cadmium, lead, and copper using a carbon DEP chip (C-DEP); arsenic, mercury using a gold DEP chip (Au-DEP); gold and silver using C-DEP chip. The X-axis and Y-axis represent the potential (mV) and the current (μA), respectively. *Ref.: *Sensors* 2017, 17, 45.

Simultaneous electrochemical measurement of multiple heavy metals

SENSITIVITY

Limit of Detection ($\mu\text{g} / \text{L}$)

Cd	Pb	As	Hg	Cu	Zn	Au	Ag
2.6	2.2	5.0	1.5	15.5	14.4	15	24

PERFORMANCE

	Conventional (ICP-MS)	DEPSOR-M
Set-up cost	\$ 179,000 ~ 448,000	< \$ 3,000
Running cost per sample	\$ 50	< \$ 10
Sample analysis time	~ 5 min	1 to 5 min
Analytical procedure	Complex	Easy
Portability	No	Yes
Contamination	High	No / Less
Sample preparation	Multi-step	Simple
Sample volume required	mL	μL
Detection limit	extremely sensitive (ppt~)	sensitive (sub-ppb~)

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