

PORTABLE DRINKING WATER PURIFICATION DEVICE FOR EMERGENCY USE

Patent
Portable Water Filtration Device :
PI 2018703912



Patent
Filter Paper:
PI2015704571



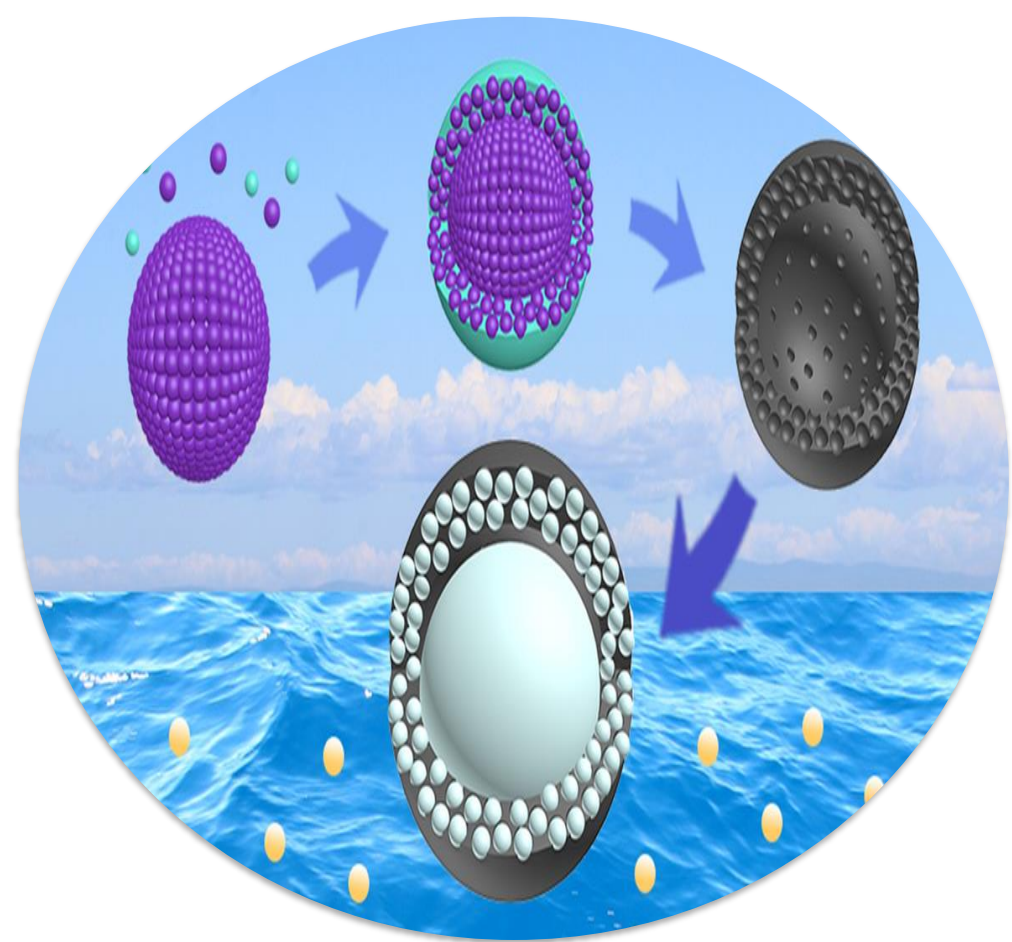
- Dimension: W14 x H25 cm
- Material: PVC
- Finishing: Clear Coated
- Dry Weight : <300 g

- **Chemical reduction method** using sodium borohydride
- Can be prepared by **2 hours**
- Particle size distribution of silver nanoparticles was between **5 and 31 nm**.

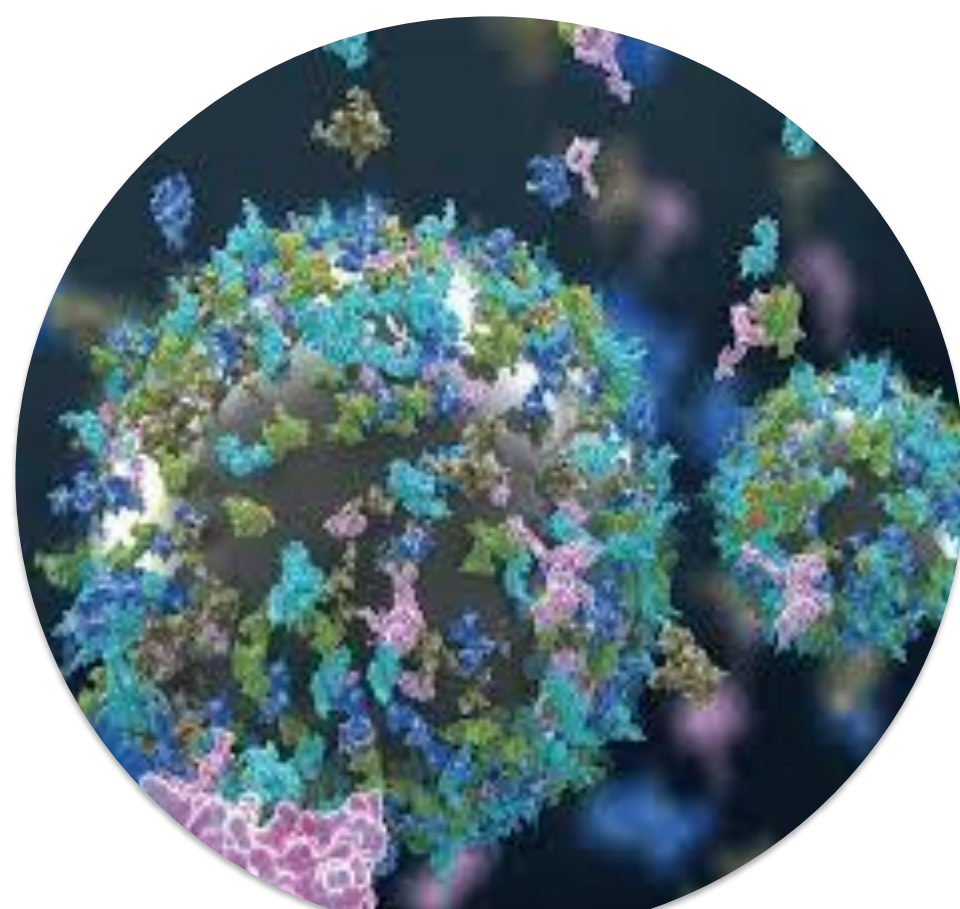
TABLE 1: PERFORMANCE OF EMERG NANO FILTER FOR SMALL SCALE USING FIELD SAMPLES

		pH	Temp (° C)	Turbidity (NTU)	E. Coli (cfu/100 mL)	Heavy metal (mg/L)	Human Health Risk
Low turbid	Tap water	6.5	24.3	4.4	NIL	All the heavy metals were in µg/L	Low
	Rainwater	6.3	24.0	5.2	NIL	All the heavy metals were in µg/L	Low
High turbid	River water	6.6	24.5	8.3	Present	All the heavy metals were In mg/L	High
	Malaysia Drinking Water Quality Standard	6.5 - 9.0	-	5	0	mg/L	--
	WHO Drinking Water Quality Standard	6.5 - 9.5	-	5	0	mg/L	-

INTRODUCTION OF TECHNOLOGY



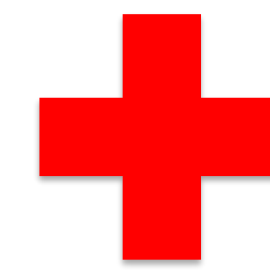
Nanotechnology



Nanoparticle

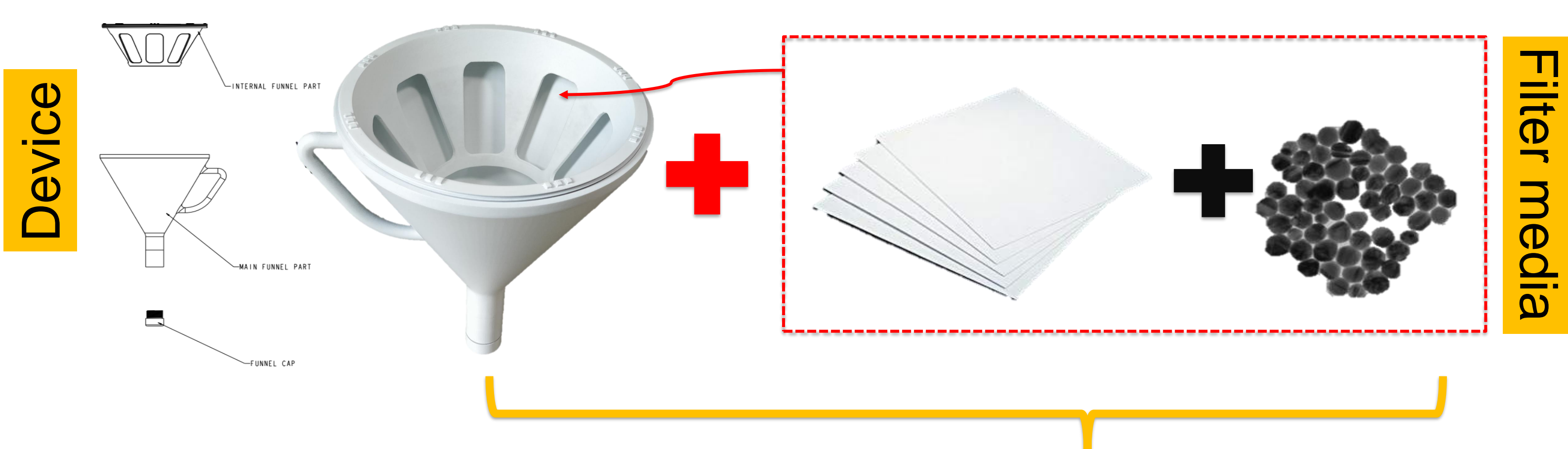


Material



Point-of-use water purification

INVENTION



Silver nanoparticle has been incorporated into range of materials to remove E.coli in drinking water. Another most promising and economic use of silver nanoparticles in drinking water is cellulose based filter paper. Cellulose based filter paper is a new material to deactivate E.coli using silver nanoparticles.

- Less parts
- Easy arrangement
- Able to hold wet/dry filter material
- User friendly
- Flow of gravity filtration
- No additional energy needed

ADVANTAGE

- Suitable for any emergency use
- Low cost material
- No chemical addition
- Minimizes electricity usage
- Low energy input (no electricity/pump required)
- Non-toxic and easy to distribute
- Sustainable point-of-use water treatment

MARKET POTENTIAL

Suitable to be used by:

Industry

- Water industry company/ emergency water filter industries

Consumers:

- People in any emergency situation (disaster situation), relief centers
- People in remote places
- Non-Governmental Organization (Red Crescent Movement, MERCY)



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