

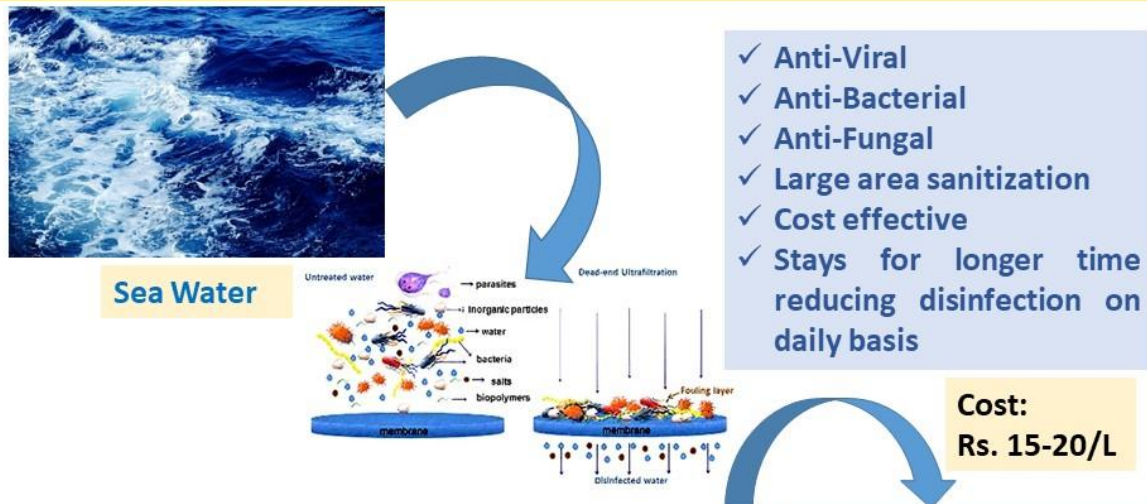
-“LARGE AREA AQUA SANITIZER” -

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Large area sanitization is very important during Covid19 crisis - Disinfection refers to specific measures taken to control, deactivate or kill infectious agents, such as viruses and bacteria. Disinfection is normally undertaken on an infrequent basis, during periodic maintenance checks or after a public health event, such as the suspected carriage of an infectious passenger. As health workers and governments around the world work to slow the spread of COVID-19, the disease caused by the novel coronavirus, large-scale disinfection efforts are becoming routine. Using methods ranging from simple hand-wiping to mobile spray cannons, workers and volunteers are attempting to halt the transfer of the virus by touch. While there are questions about the efficacy of some of the broader spraying tactics, disinfecting frequently-touched surfaces can help stop the spread of the virus. The current available disinfectant used sodiumhypochlorite (bleach) is not effective for viruses and the process has to be carried out on daily basis, making its cost very high. Additionally, usage of such high quantity bleaching powder is harmful to both humans as well as animals. We propose here a novel nanomaterial active against viruses, which can be used using sea water as the medium for large scale disinfection.

It is reported that globally there are various measures to combat the effect of coronavirus. The need for disinfectants has got essential that one of the largest bleaching powder companies in China is running at full capacity to meet demand. Nevertheless, it is well known that chlorine bleach does not actually penetrate bodily fluids and cannot penetrate grease and grime on surfaces and cannot be effective on killing the virus. Inhaling of bleach is also another kind of hazard to humans. Qatar Airways has used Viraclean, a hospital-grade disinfectant made by Sydney-based Whiteley Corp, which can kill different bacteria and virus. Microgen a US based company is selling the disinfectant D-125 which

Aqua Sanitizer: A novel AB_2O_4 type low cost spinel intimate nano junction for antiviral large area application using sea water



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AB_2O_4 Spinel: 10 ng/mL



contains a 3rd generation twin chain quaternary ammonium compound. Herein, we are going to utilize easily available novel materials and cost effective. We propose here to prepare a novel aqua based sanitizer cum disinfectant using AB₂O₄ type spinel intimate nano-junction using sea water as the media for the nanomaterials. The use of seawater will minimize the cost of IPA or ethanol and still be more effective. The seawater will be filtered through a clay-based filter to turn down any other algae or other fouling agents and then to use for our disinfectant. The salinity, basic pH (8.5) offers it to be a good candidate for the process. We know that AB₂O₄ type material is quite effective against a host of viruses and bacteria. The mechanism behind this could be due to forming the nanostructures mostly less than 50 nm can effectively bind and inhibit the positive stranded RNA present in the coronavirus (SARS-CoV-2). Additionally, it will kill the virus on the surface and remain stable for few days, minimizing the need for disinfection on a daily basis. It will not only be a crucial in Indian startup ecosystem but also on the world as everyone are looking for effective alternatives to bleaching powder. Based on the experiment data we have a firm belief that the same will be useful even in the foreign countries like Italy and USA as well for larger scale implementation.

➤ **Evidence of initial traction**

➤ Please follow the Youtube Videos of our group in the following links:

Aqua Sanitizer: <https://www.youtube.com/watch?v=cV-bWq5f6YA&feature=youtu.be>

➤ **Testimonials**

1. *Top 30 in Hack the Crisis in India – Hackathon organized by Garage 48 together with the Dept. MeitY, Govt. of India.*

2. *Top 15 in The Global Hackathon organized by Garage 48 (7th Place) in the International platform.*

<https://www.guaana.com/challenges/shmtfpQ8wmtce6Ne5/results/vLps4z95vb9LSFzR3>

<https://m.economictimes.com/small-biz/startups/newsbuzz/india-joins-global-hackathon-to-provide-solutions-to-covid-19/articleshow/75084744.cms>



➤ **Patent Application:**

➤ We have filed a provisional patent with the Application no. 202031016183-dated 15.04.2020 under the title “A novel anti-pathogenic aqueous sanitizer powered by the Nano-hybrids” on our technology.

➤ **Budgetary Requirement**

- ✓ 1.5 months in total; 15 days for Testing & Certification and another 15 days for prototype optimization as per the test results. The two weeks will be needed to set up a pilot unit for bulk production of the Nano-hybrids.

➤ **Budgetary Requirement**

Head	Cost	Justification
Capital Equipment	10,00,000 + GST (18%) = 11,80,000 INR	For fabrication of principle Nano-hybrid making machine and the accessories.
Chemicals cost	5,00,000 INR (inclusive GST)	Incorporation to masks to obtain the advanced features like Anti-viral super-hydrophobic nature. Includes R&D optimization.
Testing and Certification	2,00,000 INR (inclusive GST)	ICMR certification for bulk production
Recurring cost	2,00,000 INR	On process, expenditures will include all travelling and transportation charges.
Institute Overhead	4,00,000 INR	
Total:	24,80,000 INR	