

# **A low cost approach to synthesize Sand like AIOOH Nanoarchitecture (SANA) and its application in defluoridation of water**

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## **Supplementary Information 1**

Table S1: Specifications of chitosan used in the study

<b>Parameters</b>	<b>Specifications</b>
Source	Shrimp exoskeleton
Appearance	Off white flakes
Degree of deacetylation	Between 88- 93%
Bulk density	0.1 - 0.2 g/mL
Ash	1-3%
Toxicity	Non-toxic, environmental friendly
Viscosity	30- 40 cps

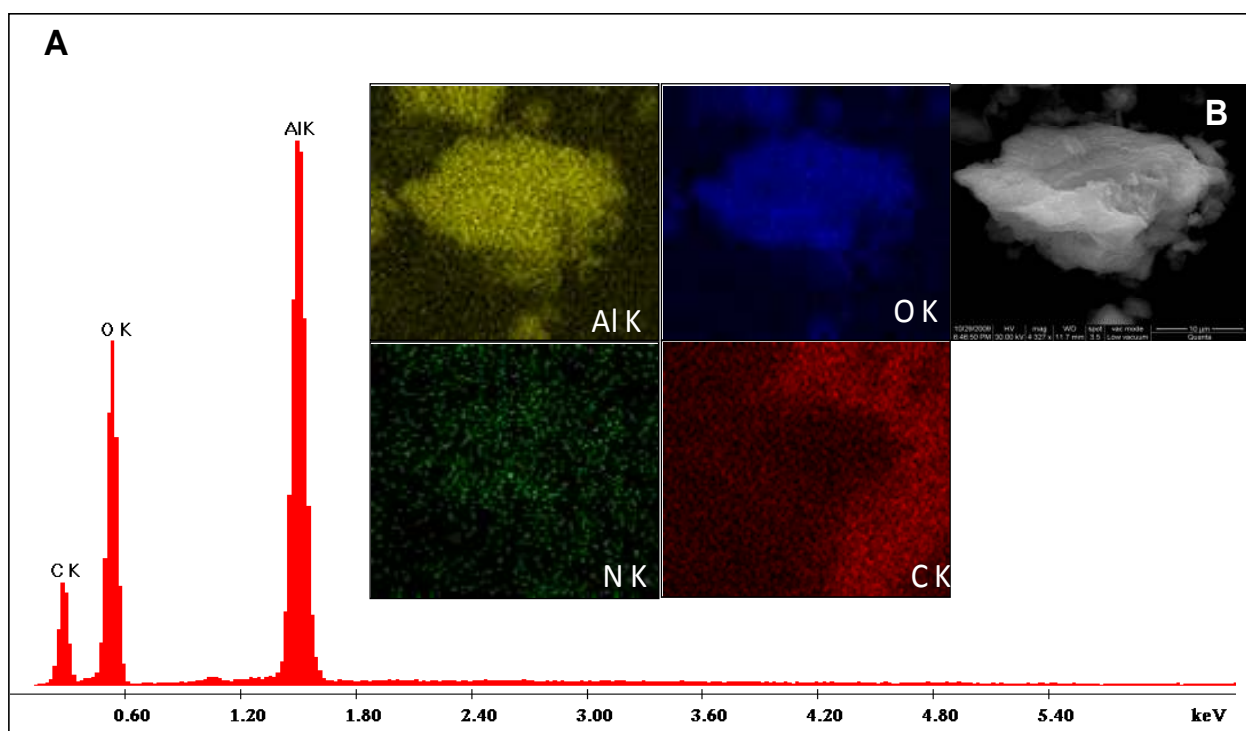
Source: Pelican Biotech and Chemical Labs Pvt. Ltd, Kerala-688533, India  
e-mai: [contact@pelicanbiotech.com](mailto:contact@pelicanbiotech.com)

## Supplementary Information 2



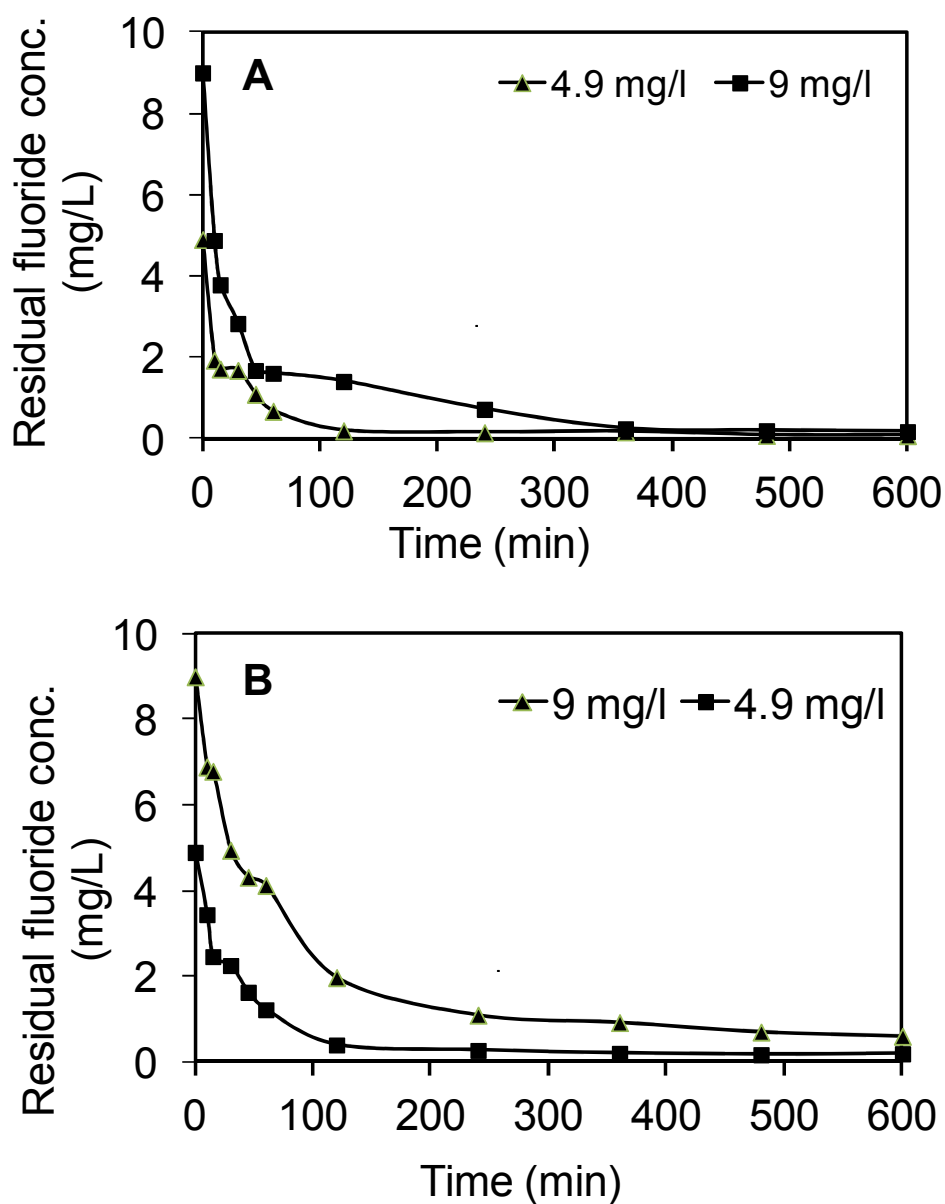
**Figure S1:** photographs showing the continuous column experiment set up. The granules sizes of the SANA used in the study are in the range of 0.3 to 1.18 mm.

### Supplementary Information 3



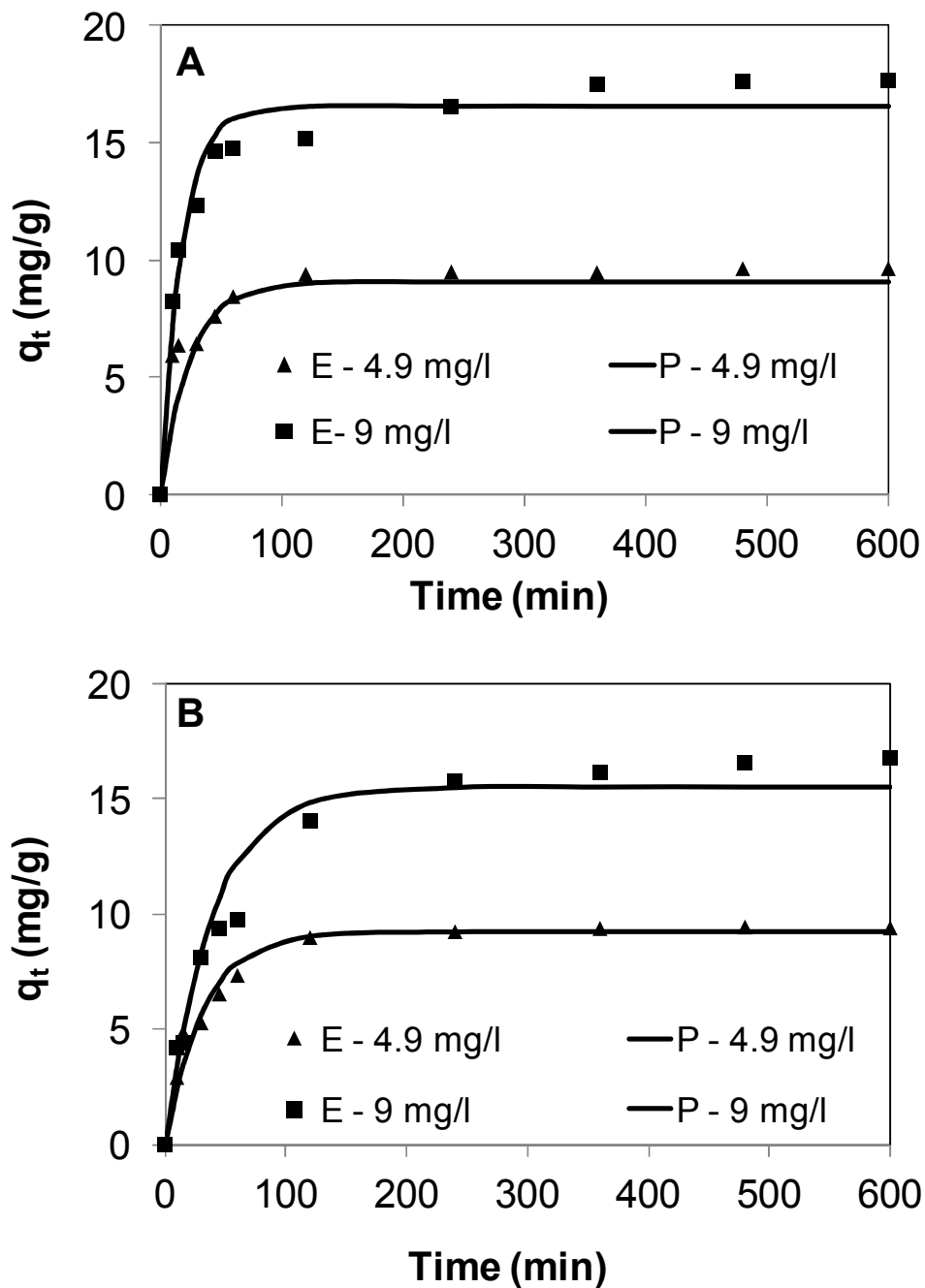
**Figure S2:** A) EDAX spectrum of SANA; B) SEM image of SANA and corresponding elemental mapping images.

#### Supplementary Information 4



**Figure S3:** A) Fluoride removal by SANA (granules sizes: < 0.3 mm) as function of adsorption time (B) Fluoride removal by SANA (granules sizes: 0.3 to 1.18 mm) as function of adsorption time. Legends show the initial concentrations of fluoride at which the kinetic studies were performed.

**Supplementary Information 5**



**Figure S4:** A) Pseudo-first order kinetic fits along with experimental data (granules sizes: < 0.3 mm); B) Pseudo-first order kinetic fits along with experimental data (granules sizes: 0.3 – 1.18 mm). Legends ‘E’ represent experimental data and ‘P’ represent the model predicted data.

## **Supporting information 6**

Table S2: Water quality parameters of tap water and RO treated water used in this study

<b>Parameters</b>	<b>Tap water</b>	<b>RO water</b>
Sulphate (mg/L)	-	BDL
Chloride (mg/L)	104.96	85
pH	7.75	6.89
Conductivity ( $\mu\text{S}/\text{cm}$ )	966.7	50.51
Alkalinity (mg/L)	350	BDL
Hardness (mg/L)	195	BDL
NO <sub>3</sub> -N (mg/L)	BDL	0.95

BDL – below detectable limit