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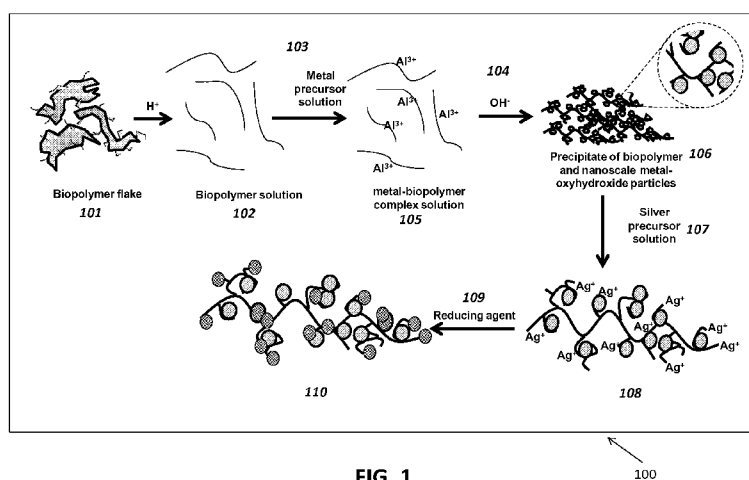


FIG. 1

(57) Abstract: Described herein are methods and compositions for preparing an adsorbent composition for sustained silver ion release is provided. The method comprises impregnating silver nanoparticles on an organic-templated-nanometal oxyhydroxide. Particle size of the silver nanoparticles is less than about 50 nm. The adsorbent composition is antimicrobial in water. In an aspect, the organic- templated-nanometal oxyhydroxide is organic-templated-boehmite nanoarchitecture (OTBN). The resultant adsorbent composition is used as a water filter in a water purification device.

## INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - B01D 24/00, 39/00 (2012.01) USPC - 210/504, 506, 503, 500.1, 3438, 663, 660, 483, 502/406, 400, 405; 423/592.1, 579 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC(8): B01D 24/00, 39/00 (2012.01) USPC: 210/504, 506, 503, 500.1, 3438, 663, 660, 483, 502/406, 400, 405; 423/592.1, 579 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); DialogPRO; PubMed/Medline; Google/Google Scholar; Search Terms: Water*, H2O, purify*, filter*, sanitize*, treat*, Adsorbent*, Silver*, Ag, Nano*particle*,Organic*template*, nano*meta, *ox*hydroxide*, *boehmite*, drop*wise*, impregnat*, ion*, precursor*		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2010/003267 A1 (TRAN, CH) January 14, 2010, abstract; page 3, line 23 to page 4, line 17; page 5, lines 28 to page 6, line 6; page 8, lines 6-23; page 9, lines 1-11; page 14, lines 1-18; page 18, lines 1-3; page 21, lines 1-6; Examples 3b, 4a, 4b, 5, 6	1-34
Y	US 2008/0121584 A1 (CHEN, H et al.) May 29, 2008, paragraphs [0044]-[0053]	1-34
Y	WO 2011/015429 A2 (LOONTJENS, J et al.) February 10, 2011, abstract; page 1, lines 1-11; page 1, lines 26-34; page 17, lines 1-20; page 33, lines 11-25, page 34, Tables 4, 5	1-34
Y	PRADEEP, T et al., Noble Metal Nanoparticles for Water Purification: A Critical Review. Thin Solid Films. 01 April 2009. Vol. 517; doi: 10.1016/j.tsf.2009.03.195; page 6464, paragraphs [007]-[008]; page 6452, paragraph [008]; page 6453, paragraph [011]; page 6459, paragraph [003]; page 6465, paragraph [003]; page 6467, paragraph [004]; page 6468, paragraph [010]; page 6470, paragraph [006]; page 6471, paragraphs [009]-[010]; page 6472, paragraph [001].	4-6, 17, 22-24, 34
Y	US 2010/0006508 A1 (MITCHELL, MD et al.) January 14, 2010, abstract; paragraphs [0028], [0030], [0033], [0038]	2-10, 20, 25-27
Y	WO 2006/072944 A2 (BERKOWITZ, B et al.) July 13, 2006, page 70, lines 12-14; page 99, lines 27-29; page 102, lines 16-19	6, 24
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