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(71) Applicant: **GRAFOID INC.** [CA/CA]; 945 Princess
Street, Kingston, Ontario K7L 0E9 (CA).

(72) Inventors: **SHANNON, Michael, Edward**; 4 Bridge
Street, Ottawa, Ontario K0K 2T0 (CA). **ZHOU, Yang**;

51 Arten Avenue, Richmond Hill, Ontario L4C 9X1
(CA). **RUNTÉ, Cameron, S.**; 1077 Katherine Crescent,
Kingston, Ontario K7P 2V1 (CA). **MANGA, Kiran Ku-**
mar; #04-318, Block 634, Jurong West Street 65, Jurong
640634 (SG). **BALAPANURU, Janardhan**; BLK 636B,
#27-329, Senja Road, Bukit Panjang 672636 (SG).

(74) Agent: **MBM INTELLECTUAL PROPERTY LAW
LLP**; 275 Slater Street, 14th Floor, Ottawa, Ontario K1P
5H9 (CA).

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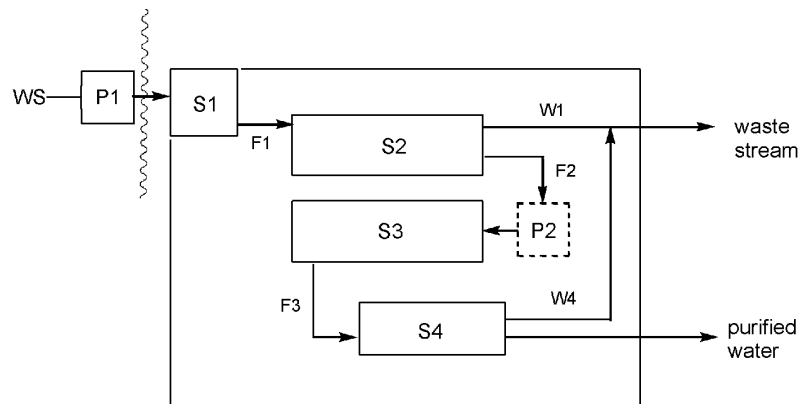


FIG. 1

(57) Abstract: The present invention provides a multi-stage filter system suitable for the production of drinking water from a wide variety of contaminated water sources. The modular nature of the multi-stage filter system allows for the customization of filter combinations according to the remediation requirements. The multi-stage filter system comprises a coarse filter (S1); an ultrafiltration filter (S2); a graphene-based filter (S3); and a residual nanoparticle filter (S4). The graphene-based filter cartridge comprises few-layer graphene powder; a combination of few-layer graphene powder and pellets comprising a mixture of polyethersulfone, graphene oxide (GO), and dimethylformamide; a composite comprising chitosan, GO, sodium sulfate and ferric chloride; or a combination of few-layer graphene powder, granular activated carbon and a composite comprising chitosan, GO, sodium sulfate and ferric chloride.

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