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Sodium alginate/graphene oxide hydrogel beads as permeable reactive barrier material for the remediation of ciprofloxacin-contaminated groundwater

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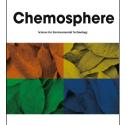
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ACCEPTED MANUSCRIPT

1	Sodium Alginate/Graphene Oxide Hydrogel Beads as Permeable Reactive
2	Barrier Material for the Remediation of Ciprofloxacin-Contaminated
3	Groundwater
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12	Abstract: The wide occurrence of antibiotics in groundwater has raised serious
13	concerns due to their impacts on humans and the ecosystem. Most of the research in
14	groundwater remediation focuses on the exploitation of nano-materials. However,
15	nano-materials have several disadvantages such as high production cost, rapid
16	reduction in permeability, disposal problems, and high sensitivity to environmental
17	conditions. To solve these issues, novel sodium alginate/graphene oxide hydrogel
18	beads (GSA) were synthesised and their effectiveness as permeable reactive barrier
19	(PRB) backfill material in the remediation of ciprofloxacin (CPX)-contaminated
20	groundwater was tested. The adsorption of CPX onto GSA followed the
21	pseudo-second-order kinetic model. The isotherm data followed the Freundlich model.
22	The maximum adsorption capacity was 100 mg g^{-1} at pH 7.0. The adsorption process
23	was sensitive to contact time, initial CPX concentration and ionic strength. However, $1/29$

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