

Fiche analytique – Mémoire de Master MUSE

A rendre au secrétariat lors de l'inscription à la soutenance du mémoire

* champs obligatoires

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TITRE MEMOIRE*	Spent Pleurotus Ostreatus Substrate (SPOS) adsorbance capacity of Phosphorus from Aire STEP wastewater		
NUMERO MEMOIRE	(à remplir par le secrétariat)		
DATE SOUTENANCE	Salle:	Heure:	
THEMATIQUE* (AFFILIATION)	Wastewater treatment ; Affiliation filiere d'eau		
VOLEE MUSE*	2018		
TITRE ACADEMIQUE* (par ex.: licencié en biologie)	Master Degree in Environmental Sciences		
DIRECTION* / EVALUATION	Directeur de mémoire* Serge Stoll	Co-directeur de mémoire*	Nom(s) du ou des juré(s)* Cedric Albert Amandine Lafitte Serge Stoll
STAGE (éventuel)	Organisme d'accueil	Maître de stage	
Projet de l'ISE (éventuel) auquel le mémoire est rattaché			
Bourse (éventuelle) reçue par l'étudiant			
COLLATION*	Nb de pages* 50	Nb de figures*19	Nb de tableaux*7
TERRAIN D'ETUDE OU D'APPLICATION			
MOTS-CLES* (entre 5 et 10)	Phosphorus, Recovery, Bioadsorbant, Spent Pleurotus Ostreatus Substrate, Adsorption		
RESUME* (max 1500 car)			
SUMMARY* (en anglais)	<p><i>Background</i></p> <p>Currently, to replace Phosphorus (P) removed by plants due to intensive farming and land-use the phosphate to the limit. Although P, being a non-renewable resource, is depleting, to date there is a lack of a feasible solution for putting P back to the soil. One of the significant sources of P, which could be recovered, is the municipal wastewater. This study is focused on the bio adsorbance technic of P-extraction from the wastewater, due to its non-invasive and non- "energivoros" P-recovery. The adsorption, in our case, is the adhesion of solid molecules (adsorbate) to the surface of the solid bodies or liquids (adsorbent). The bio adsorbent chosen is the Spent <i>Pleurotus Ostreatus</i> Substrate (SPOS) due to its biologic and chemical properties, as well as biotechnological and environmental applications. Also, the SPOS is currently seen as a waste to treat.</p>		

	<p><i>Scope and approach</i></p> <p>This study presents the environmental experiment, set up to recover P from the wastewater by means of the SPOS bio adsorbent. Investigations on the adsorbance capacity and efficiency were performed via adsorbance tests, SPOS surface charge measurement and UV and Infra-Red spectrometry techniques.</p> <p><i>Key findings and conclusions</i></p> <p>The most important finding is that the SPOS surface charge is mainly negative at pH over 4.5. Therefore, the anions, including the phosphates, will not be attracted to the surface of the SPOS. Whereas the cations, for example the metals, may promptly occupy the SPOS surface adsorption sites. <i>Laboratory tests showed that, not only the P-adsorption by SPOS proved to be insignificant, but the release of the phosphates from the SPOS surface into the solution medium was observed. If SPOS has high concentration in phosphates, more efficient than P recovery from the wastewater environmental applications can be proposed.</i> One of the cost-efficient and environmentally friendly applications of the SPOS could be the optimization of the commercial mushroom cultivation via re-use of the substrate for the next series of the mushrooms from the same family.</p> <p><i>Nevertheless, the P recovery from the wastewater with the other bio adsorbents for the subsequent use in farmlands is the topic which triggers a vivid scientific interest (Corrêa R. et al. 2016). More in-depth studies are needed, to explore the most efficient and cost-effective bio adsorbent for the imminent P-recovery from the municipal wastewater.</i></p>
REMARQUES	