Polytech network form for PhD Research Grants from the China Scholarship Council

This document describes the PhD subject and supervisor proposed by the French Polytech network of 14 university engineering schools. Please contact the PhD supervisor by email or Skype for further information regarding your application.

Supervisor information	
Family name	SALLES
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Web reference	Cliquez ou appuyez ici pour entrer du texte.
Lab name	HydroSciences Montpellier
Lab web site	http://www.hydrosciences.org/?lang=en
Polytech name	Polytech Montpellier
University name	University Montpellier
Country	France

PhD information	
Title	Coastal urban rivers and chemical input to offshore areas : contaminant characterization, quantification of fluxes and application to a coastal river
Main topics regards to CSC list (3 topics at maximum)	-Hydrology and continued use of resources of the ground and water -Mechanism of environmental pollution and technology of control -World change and evolution of the environment

Required skills in science and engineering	MSc or Meng Water Sciences hydrology, chemistry, field work

Subject description (two pages maximum)

This PhD is focused on coastal rivers that cross highly urbanized areas before flowing into the sea. These rivers carry cocktails of chemical contaminants, often non-natural ones (fungid / retardant products / ...), in dissolved and / or particulate form, and it is important to characterize the dynamics of this contaminants in the perspective of a good management of the quality of coastal waters.
In this context and on the example of the Lez river which drains the urban area of Montpellier (France), the thesis will treat three main aspects:
- the identification of the contaminants and the quantitative evaluation of the fluxes generated by the urban and industrial anthropogenic activities, on the basis of a multidisciplinary approach coupling (i) the spatial analysis of activities, (ii) the implementation of observation protocols which make it possible to characterize the contaminant concentrations as a function of hydrological conditions and human activities and (iii) chemical analyzes in the laboratory.
- a focus on particulate fluxes, with the development and the implementation of a sampling protocol devoted to suspended solids, to better assess the particulate fraction of contaminant fluxes and to have samples that will allow to better understand the processes of sorption and desorpion of contaminants on these solid elements.
- the quantification, through studies in mesocosms, of the impact of a cocktails of chemical contaminants coupled with environmental stressors (strong variation of the temperatures, successions of drought and flash floods) on the good health of the environment and in particular the survival of the autochton bacteria communities. Organotin compounds and brominated diphenyl ethers will be specifically adressed here.