EOLI

Efficient Operation of Urban Wastewater Treatment Plants

Contract Number ICA4-CT-2002-10012

UNAM (Partner No. 6)

WP3

November 22-24, 2004, Milano, Italia

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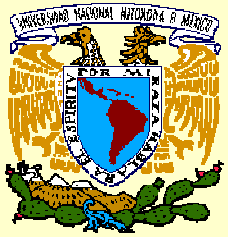

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Introduction

- **Stage of 6 months at the Universite of Technologie of Compiègne collaborating with the WP3 activities.**

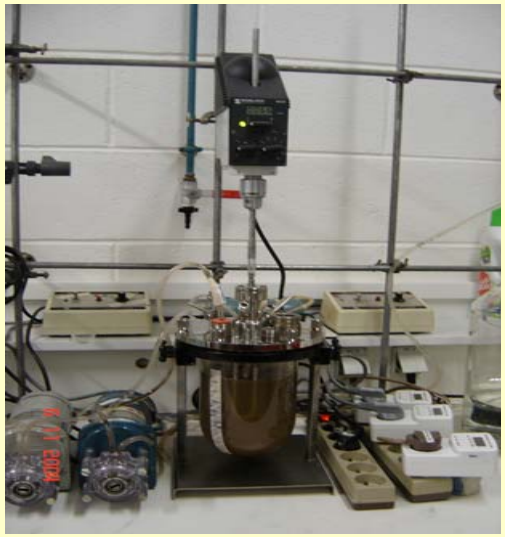
The objectives were:

- **1) The start-up and acclimation of a reactor to 4-chlorophenol (4-CP) (standard conditions at UNAM, WP1)**
- **2) To evaluate the possibility to follow the biodegradation of 4-CP with the UV-spectra**
- **3) To evaluate an UV spectral sensor to monitor on-line the 4- CP and biomass concentration.**

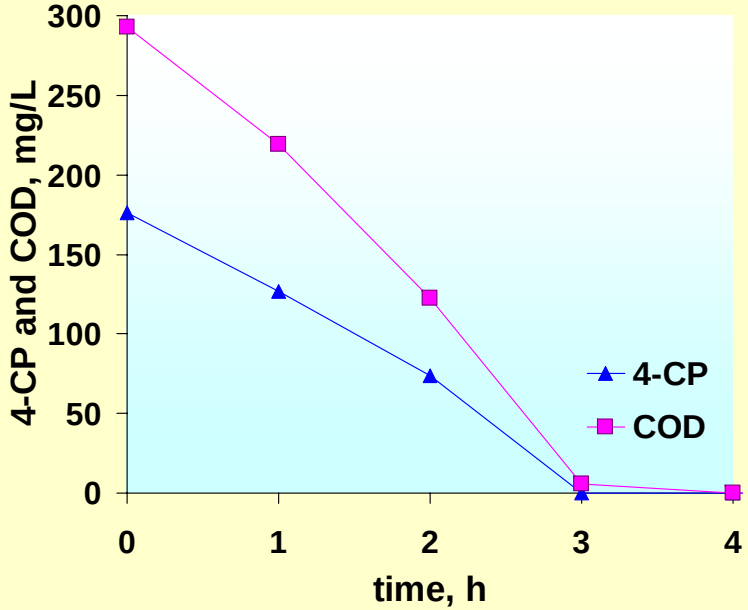
Experimental results

1. Start-up and acclimation

- Inoculum: activated sludge
- Reactor volume: 1.5 L
- O_2 > 2.0 mg/L
- Feed: 4-CP + Mineral solution
- Standard conditions:
  - 200 mg 4-CP/L
  - 2000 mg TSS/L



SBR reactor for the 4-CP biodegradation

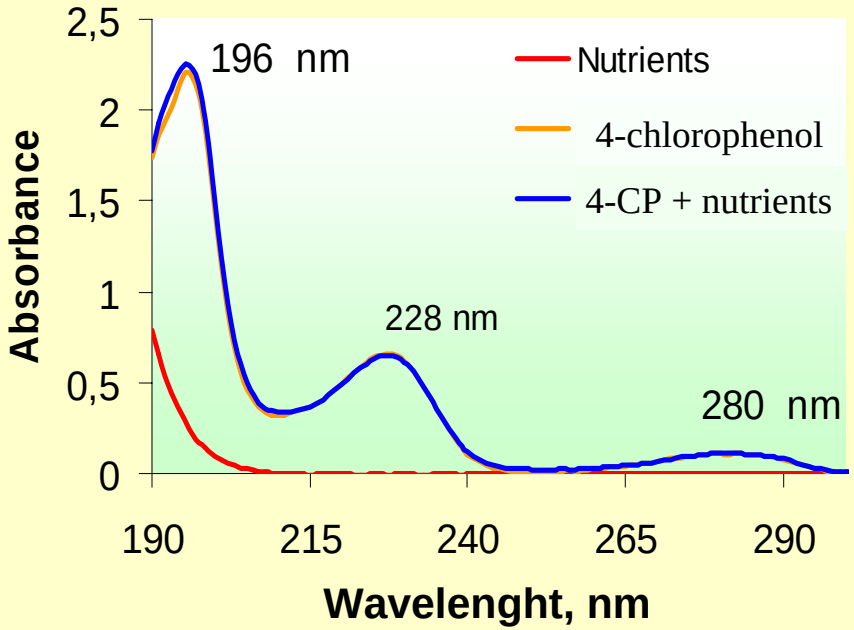


Kinetic for one cycle of the SBR reactor

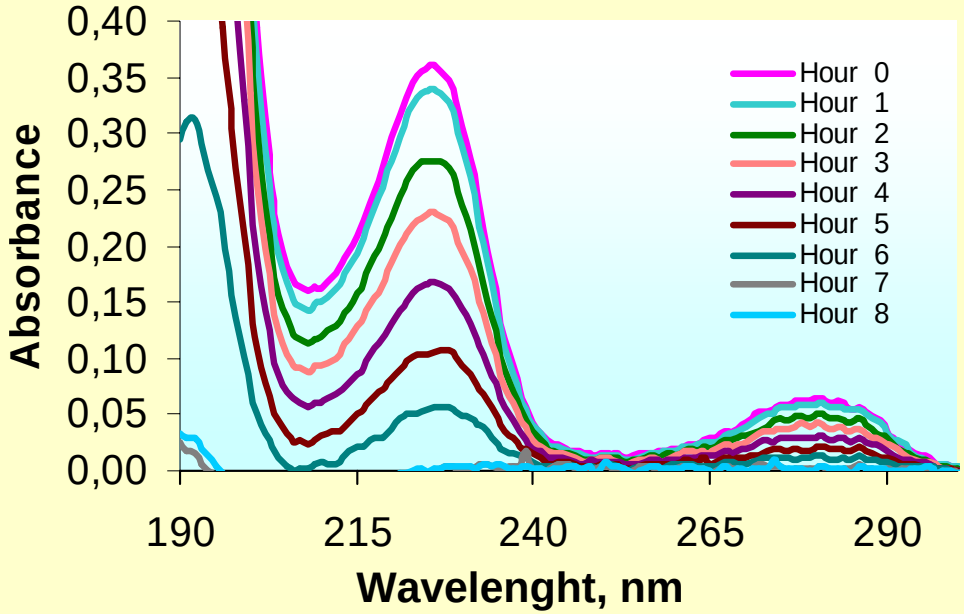
- ***The reactor has achieved the stable state***
- ***Cycle time duration 4.25 h***
- ***Removal efficiency 4-CP > 95 %***

Experimental results

2. 4-CP measurement



Solution of 25 mg 4-CP/L



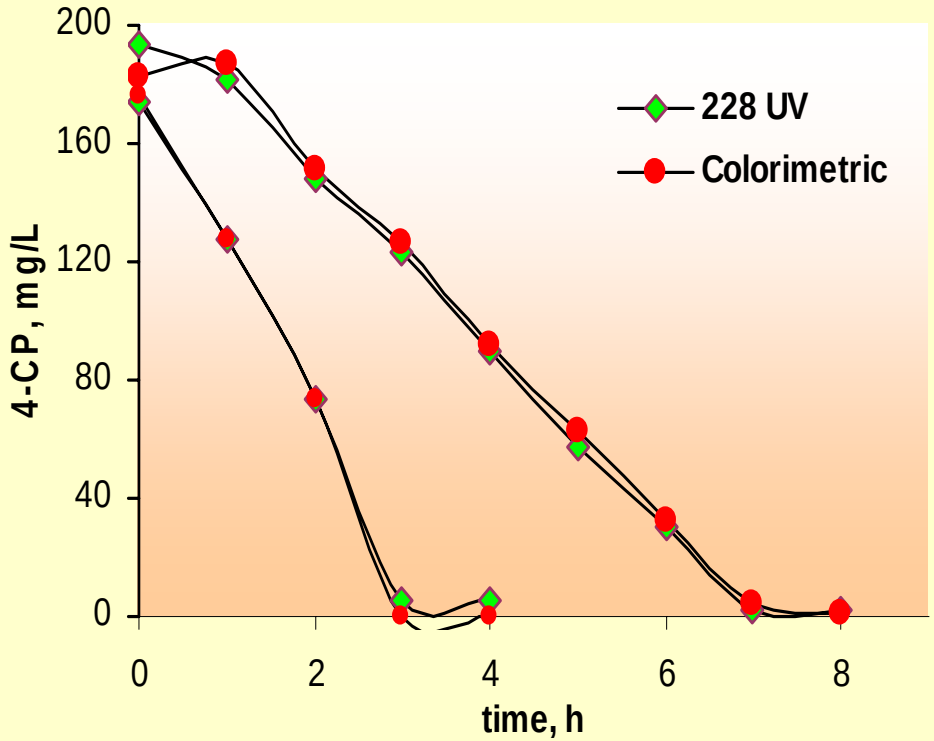
Behavior of the UV spectra of 4-CP for one cycle, with dilution

- **Both peaks, at 228 and 280 nm, are useful to follow the 4-CP biodegradation**
- **There is a linear correlation of the absorbance and 4-CP concentration.**

Experimental results

2. 4-CP measurement

- Colorimetric (standard method) vs UV spectra

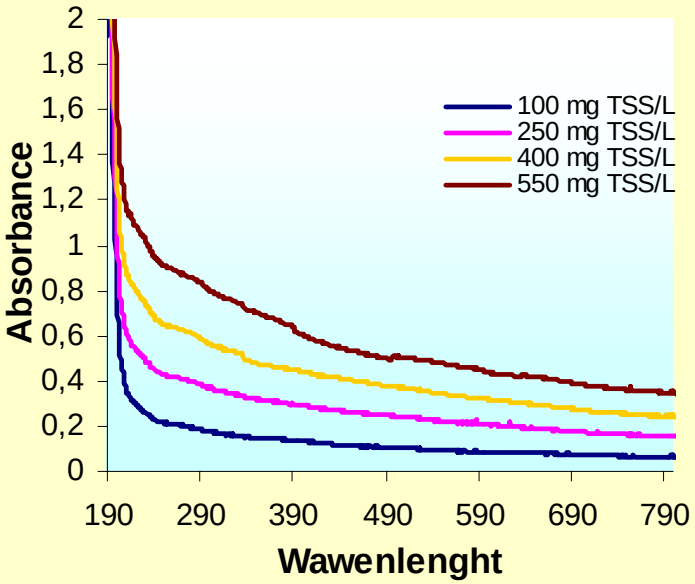


- **It is posible to use directly the UV-spectrum to measure the 4-CP concentration during the cycles of the reactor**

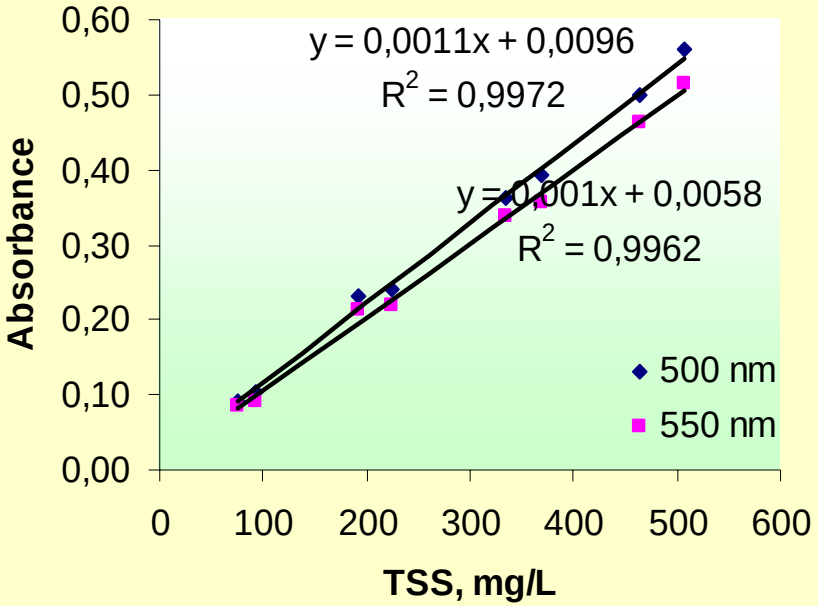
Measurement of 4-CP for two different cycles time duration of the SBR reactor

Experimental results

3. Mixed liquor of the reactor



UV visible spectra for the diluted mixed liquor of the SBR reactor



Relation between the absorbance and TSS concentration

- **There is a linear correlation between the absorbance and the TSS concentration, but is necessary to dilute for higher concentrations**

Conclusions

✓ 1) The start-up and acclimation of a reactor to 4-CP (standard conditions at UNAM)

✓ 2) Is possible to follow the biodegradation of 4-CP with the UV-spectra

3) To evaluate the UV spectral sensor to monitor on-line the 4-CP and biomass concentration.

Future experiments

(November 29 to 9 December 2004)

On-line measurement of biomass and of the 4-CP with a new UV spectrophotometer sensor

End of the presentation

UNAM

Work Package 1

UNAM (Partner No. 6)

Second Year Mid Term Report

October2003

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