

NEWSLETTER

Υβριδικό μοντέλο επεξεργασίας
στραγγισμάτων ΧΥΤΑ συνδυάζοντας
τη χρήση Προχωρημένων
Οξειδωτικών Διεργασιών
Αντιρρύπανσης (ΠΟΔΑ) και την
τεχνολογία των μεμβρανών



UV-LEACH

«ΕΡΕΥΝΩ – ΔΗΜΙΟΥΡΓΩ – ΚΑΙΝΟΤΟΜΩ»



«ΕΡΕΥΝΩ – ΔΗΜΙΟΥΡΓΩ – ΚΑΙΝΟΤΟΜΩ»
Β' ΚΥΚΛΟΣ



ΚΕΔΕΚ
Κέντρο Διεπαγγελματικής Καινοτομίας



ΤΜΗΜΑ ΧΗΜΕΙΑΣ
ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ

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διαδυμα
ΔΙΑΛΕΞΗΣ ΔΙΑΦΡΟΦΑΣ ΔΙΤΙΣΣΕΣ ΜΑΚΕΔΟΝΙΑΣ Δ.Σ.



ΕΠΑνΕΚ 2014-2020
ΕΠΑΧΕΙΡΕΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ
ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ
ΚΑΙΝΟΤΟΜΙΑ

ΕΣΠΑ
2014-2020

ΕΛΛΗΝΙΚΟ
ΑΝΟΙΚΤΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ



CONFERENCES

18th Annual Workshop On Emerging High-Resolution Mass Spectrometry (HRMS) And LC-MS/MS Applications In Environmental Analysis And Food Safety (Barcelona 10-11, October)



ORAL PRESENTATIONS



UV-LEACH



«ΕΡΕΥΝΩ – ΔΗΜΙΟΥΡΓΩ – ΚΑΙΝΟΤΟΜΩ»
Β' ΚΥΚΛΟΣ



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ΚΕΝΤΡΟ ΔΙΕΤΗΝΟΜΟΥ ΕΡΓΑΣΙΑΣ ΚΑΙ ΚΑΙΝΟΤΟΜΑΣ ΑΖΙΣ



UV-LEACH



Σιαδύμ
ΔΙΑΧΕΙΡΙΣΗ ΑΙΓΑΙΟΝ ΜΑΚΑΡΟΝΑΣ Α.Ε.



**“COMPACT SUSPECT SCREENING WORKFLOW
FOR THE ELUCIDATION OF TPS OF THE DIURETIC
DRUG FUROSEMIDE”**

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Sacramento s/n, La Cañada de San Urbano,
Almería, 04120, Spain



**5th Iberoamerican
Conference on Advanced
Oxidation Technologies
(Cusco-Peru 7-11, November)**



CONFERENCES

**“LC–HRMS SUSPECT SCREENING WORKFLOW TO
ELUCIDATE TRANSFORMATION
PRODUCTS OF LINCOMYCIN AFTER
PHOTOCATALYTIC ABATEMENT USING
MOF-BASED PHOTOCATALYSTS”**

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Innovation (CIRI-AUTH), Thermi, 57001

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ORAL PRESENTATION



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«ΕΡΕΥΝΩ – ΔΗΜΙΟΥΡΓΩ – ΚΑΙΝΟΤΟΜΩ»
8^η ΚΥΚΛΟΣ

UV-LEACH



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διαδύμα

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ΚΑΙΝΟΤΟΜΙΑ

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

**ΕΣΠΑ
2014-2020**

**ΕΛΛΗΝΙΚΟ
ΑΝΟΙΚΤΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ**

Υβριδικό Μοντέλο Επεξεργασίας στραγγισμάτων XYTA



5th Iberoamerican Conference on Advanced Oxidation Technologies (Cusco-Peru 7-11, November)

CONFERENCES

"PHOTOCATALYTIC PERFORMANCE OF BUOYANT TIO₂-IMMOBILIZED POLY(ETHYLENE TEREPHTHALATE) BEADS FOR PHARMACEUTICALS REMOVAL"

D. Lambropoulou, N.M. Ainali, N. Malesic, E. Evgenidou, D. Bikaris

PHOTO-ASSISTED REMOVAL OF PHARMACEUTICALS USING MAGNETIC NANOCOMPOSITE-F10, IMMOBILIZED POLY(ETHYLENE TEREPHTHALATE) BEADS

R.D. Bikiaris¹, N.M. Ansal¹, A.S. Rapti¹, I.E.N. Evangelidis¹, D.A. Lambropoulos^{1,2*}

¹ Department of Chemistry, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece
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INTRODUCTION

The synthesis and application of the bi-based magnetic nanocomposite beads and magnetic beads such as F10, can significantly reduce the cost of pharmaceutical removal.

In the present study, F10 nanoparticles were synthesized with magnetic poly(ethylene terephthalate) (PET) and functionalized with poly(ethylene glycol) (PEG) to improve their adsorption performance towards pharmaceuticals. Three different synthesis routes were used to synthesize the magnetic nanocomposite beads. The magnetic properties of the synthesized beads were evaluated by the measurement of the saturation magnetization, remanence magnetization, coercivity, and hysteresis loops, while the photochemical performance of the synthesized beads was evaluated by the degradation of the pharmaceutical drug ibuprofen.

METHODS

01 Synthesis and characterization of the bi-based magnetic nanocomposite beads and magnetic beads such as F10, can significantly reduce the cost of pharmaceutical removal.

02 Synthesis and characterization of the magnetic nanocomposite beads.

RESULTS & DISCUSSION

03 FTIR

Spectral characterization

SEM/EDX

Morphological & elemental description

ECC

Thermal stability

Photocatalytic performance

CONCLUSIONS

The new composite F10 (ibuprofen loaded) beads were successfully synthesized and characterized. The degradation of ibuprofen was studied under UV-vis irradiation. The results showed that the synthesized F10 beads exhibited excellent photocatalytic activity and the effect of several operational parameters on the degradation of ibuprofen was studied.

The synthesized magnetic nanocomposite beads had great potential for the removal of pharmaceuticals due to their magnetic properties, high surface area, high porosity, stability, recyclability, and photoactivity.

ACKNOWLEDGMENT

This research has been co-financed by the European Union and Greek national funds through the Operational Program "Education and Lifelong Learning" and the Research Funding Program "RFP".

REFERENCES

CONTACT INFORMATION

"PHOTO-ASSISTED REMOVAL OF PHARMACEUTICALS USING MAGNETIC-NANOCOMPOSITE-TIO₂ IMMOBILIZED POLY(ETHYLENE TEREPHTHALATE) BEADS"

R. Bikiaris, N.M. Ainali, A.Rapti, E. Evgenidou, D. Lambropoulou

“APPLICATION OF DIFFERENT SULFATE RADICAL BASED ADVANCED OXIDATION PROCESSES FOR THE DEGRADATION OF THE ANTIEPILEPTIC DRUG PREGABALIN”

A.Rapti, E. Evgenidou, C. Nannou,
D. Bikaris, D. Lambropoulou



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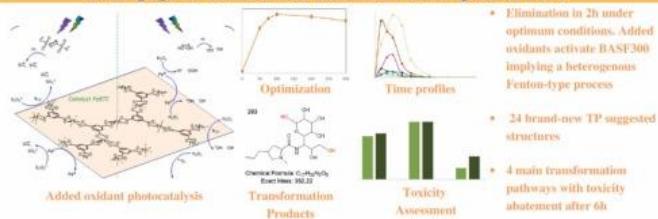
POSTER PRESENTATIONS



ΕΣΠΑ
2014-2020

PUBLICATIONS

Oxidant-assisted photocatalysis of Lincomycin *Shedding light on Basolite® F300 activation - elucidating new LIN TPs*



- Elimination in 2h under optimum conditions. Added oxidants activate BASF300 implying a heterogenous Fenton-type process
- 34 brand-new TP suggested structures
- 4 main transformation pathways with toxicity abatement after 6h

“MOF-based photocatalytic degradation of the antibiotic lincomycin enhanced by hydrogen peroxide and persulfate: Kinetics, elucidation of transformation products and toxicity assessment”

A. Kontogiannis¹, E. Evgenidou^{1,2}, C. Nannou^{1,2}, D. Bikaris³, D. Lambropoulou^{1,2}

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ΚΕΔΕΚ
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ΔΙΑΧΕΙΡΙΣΗ ΑΓΡΟΦΟΡΗΣΗΣ
ΣΤΗΝΕΛΛΑΣΛΔ

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