DEPARTAMENT DE QUÍMICA ANALÍTICA			
NÚMERO	**TEMA**	**TUTOR(S) ACADÈMIC(S) (si un és d'un altre departament, posa'l entre parèntesi)**	**TUTOR EXTERN (si escau)**
1	The role of ionic liquids as mobile phase modifiers in liquid chromatography	María José Ruiz Ángel y María Celia García Álvarez-Coque	
2	Analysis of Medicinal Plant Extracts Using High-Resolution Liquid Chromatography	José Ramón Torres Lapasió y María Celia García Álvarez-Coque	
3	Clinical analysis of active pharmaceutical ingredients and their metabolites in biofluids by HPLC	José Ramón Torres Lapasió y María Celia García Álvarez-Coque	
4	Determination of food colorings by micellar liquid chromatography	Juan Peris Vicente	
5	New sorbents to determine Polycyclic Aromatic Hydrocarbons (PAHs) in water samples	Jorge Verdú Andrés y Roberto Sáez Hernández	
6	Non destructive analysis of ancient iron oxide-based paintings	Maria Luisa Cervera Sanz y Roberto Sáez Hernández	
7	Unmasking the Role of Phenols in Scottish Malts: Analytical Insights into Flavor-Active Compounds	Roberto Sáez Hernández y Rafael Ballesteros Garrido (quimica orgánica)	
8	Assessing the Potential of MOFs as Enzyme Mimics for Analytical Applications	Hector Martinez Perez Cejuela y Sergio Armenta Estrela	
9	Analysis of archaeological ceramics using non-destructive techniques and icp-ms	M. Luisa Cervera Sanz y Angel E. Morales Rubio	
10	Analysis of nutrients in leaves and crop soils	Angel E. Morales Rubio Y M. Luisa Cervera Sanz	
11	Evaluation of sample treatments for the determination of aflatoxin m1 in milk	M. Luisa Cervera Sanz Y Sergio Armenta Estrela	
12	Evaluation of different sample treatments for the analysis of pahs in food	Angel E. Morales Rubio Y Sergio Armenta Estrela	
13	Analysis of psychoactive compounds in wastewater	Angel E. Morales Rubio Y Sergio Armenta Estrela	
14	Emerging contaminants	Lorenzo Sanjuan Navarro i Yolanda Moliner Martínez	
15	Chemical sensors for biomarkers study	Yolanda Moliner Martínez i Lorenzo Sanjuan Navarro	
16	Assessment of microplastics using separation techniques	Yolanda Moliner Martínez i Lorenzo Sanjuan Navarro	
17	Isolation and characterization of extracellular vesicles (Evs)	Carmen Molins Legua i Lusine Hakobyan	
18	Extraction and physicochemical characterization of nanovesicles	Carmen Molins Legua i Lusine Hakobyan	

19	Colorimetric sensors	Neus Jornet Martínez i Rosa Herráez Hernández	
20	Analysis of drugs	Neus Jornet Martínez i Rosa Herráez Hernández	
21	3D-Printed biomimetic solid-phase extraction platforms for the simulation of intestinal interactions	Enrique Javier Carrasco Correa	
22	Exploring functional stimuli-Responsive solid-phase extraction systems fabricated via 4D printing	Enrique Javier Carrasco Correa	
23	3D-printed extraction supports with dual stirring for solid-phase extraction of antibiotics	Miriam Beneito Cambra	
24	3D-printed stir towers with MOF integrated for sustainable multi-analyte extraction of emerging contaminants	Miriam Beneito Cambra	
25	Use of Metal-Organic Frameworks (MOFs) and MOFs@Enzyme Composites for Sensing Applications	Héctor Martínez-Pérez Cejuela y José Manuel Herrero Martínez	
26	Hybridization of Enzymes with Functional Materials for Enhanced Catalytic Performance	Héctor Martínez-Pérez Cejuela y Ernesto Francisco Simó Alfonso	
27	Development of Sensing Devices for the Determination of Total Lipid Content in Milk Samples	Héctor Martínez-Pérez Cejuela y Isabel Ten Doménech	
28	Determination of allergenic proteins using affinity low-cost extraction devices	María Jesús Lerma García	
29	Aptasensor for the detection of toxins in foods	María Jesús Lerma García	
30	Determination of emerging contaminants using affinity 3D-printed platforms	María Vergara Barberán	
31	Determination of marine toxins using low-cost supports modified with metal organic frameworks	María Vergara Barberán	
32	Aptasensors based on dye-displacement assays for recognition of relevant biomarkers	José Manuel Herrero Martínez y Isabel Ten Doménech	
33	Development of 3D-printed polymer substrates for in situ generation of metal-organic frameworks as extraction systems of emerging pollutants	José Manuel Herrero Martínez y Ernesto Francisco Simó Alfonso	
34	Development of sustainable 3D-printed supports decorated with biometal-organic frameworks	José Manuel Herrero Martínez y Emilio Pardo Marín (quimica inorganica)	
35	Use of 3D Printing for the Selective Extraction of Proteins	Ernesto Francisco Simó Alfonso	
36	Development of a solid-phase extraction system using 4D Printing with stimuli-responsive materials	Enrique Javier Carrasco Correa y José Manuel Herrero Martínez	
37	Development of high-throughput methods for bioanalysis	Alberto Chisvert Sanía y Juan Luis Benedé Veiga	
38	Microextraction strategies for the determination of biomarkers in biological fluids	Juan Luis Benedé Veiga y Alberto Chisvert Sanía	
39	Advances in the use of magnetic sorbents in microextraction techniques	Juan Luis Benedé Veiga y Alberto Chisvert Sanía	
40	Advanced Analytical Strategies for the Quantification of Mycotoxins in Urine Samples	Francesc A. Esteve Turrillas y Olga Pardo Marín	

41	Characterization of the Metabolism of New Psychoactive Drugs	Francesc A. Esteve Turrillas y David Pérez Guaita	
42	Identification of organic residues in archaeological samples by gas chromatography-mass spectrometry	Miguel de la Guardia Cirujeda y Francesc Esteve Turrillas	
43	FT IR Method Development for Marijuana analysis	Miguel de la Guardia Cirujeda y David Pérez-Guaita	
44	Identification of NPS by IR spectroscopy	David Pérez Guaita y Salvador Garrigues Mateo	
45	Identification and discrimination of proteins in clinical samples using spectroscopic techniques.	David Pérez Guaita y Olga Pardo Marín	
46	Applications of Automatic Sampling Systems in Environmental Water Monitorin	Salvador Garrigues Mateo y Francesc Esteve Turrillas	
47	Origami-inspired 3D-printed devices for the detection of proteins in food matrices	Enrique Javier Carrasco Correa y Ernesto Francisco Simó Alfonso	
48	Enantioseparation of chiral compounds in liquid chromatography using a vancomycin stationary phase	Yolanda Martín Biosca / Mª José Medina Hernández	
49	Enantioseparation of chiral compounds in liquid chromatography using a macrocyclic antibiotic stationary phase	Yolanda Martín Biosca / Mª José Medina Hernández	
50	Enantioseparation of chiral compounds in liquid chromatography using a teicoplanin stationary phase	Laura Escuder Gilabet/Yolanda Martín Biosca	
51	Miniaturized liquid chromatography to assess the presence of pollutants in environmental matrices	Pilar Campins Falcó	
52	Logistic descripion of electron transfer processes under diffusion control	Antonio Doménech carbó	
53	Asymptotic modeling of electroanalytical determinations in complex matrices	Antonio Doménech carbó	

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 María José Ruiz Ángel

ACADEMIC TUTOR 2 María Celia García Álvarez-Coque

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

The role of ionic liquids as mobile phase modifiers in liquid chromatography

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Provide the student with comprehensive training in knowledge and practical aspects of liquid chromatography.
Introduce them to the methodology typically followed in research work: literature search, interpretation, analysis, and presentation of results (writing reports, reading and writing articles, etc.). Learn the use of computer programs for the acquisition and processing of the obtained data. Study the capabilities of liquid chromatography that uses ionic liquids for the separation of compounds of pharmaceutical interest, with a graphitic carbon column.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Preparation of mobile phases in liquid chromatography.
Elution of compounds of pharmaceutical interest with mobile phases containing ionic liquids that introduce secondary equilibria.
Operation of instrumentation controlled by a data station.
Integration of chromatographic peaks and data processing.
Study of retention, chromatographic peak profiles, and resolution of analyte mixtures.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 José Ramón Torres Lapasió

ACADEMIC TUTOR 2 María Celia García Álvarez-Coque

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Analysis of Medicinal Plant Extracts Using High-Resolution Liquid Chromatography

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Proporcionar al estudiante una formación sólida y completa tanto en los fundamentos teóricos como en los aspectos prácticos de la cromatografía líquida de fase inversa.
- Introducir al estudiante en la metodología habitual de un trabajo de investigación: búsqueda bibliográfica, interpretación crítica, análisis riguroso y presentación de resultados (redacción de memorias, elaboración y lectura de artículos científicos, preparación de pósters para congresos, entre otros).
- Familiarizar al estudiante con el uso de programas informáticos específicos para la adquisición, tratamiento e interpretación de los datos experimentales, y presentación de resultados.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Preparación de eluyentes empleados en cromatografía líquida en fase inversa.
- Aprendizaje de la puesta a punto y operación de un sistema cromatográfico con gradientes de disolvente orgánico.
- Extracción e interpretación de información a partir de cromatogramas multianalito.
- Análisis de los componentes presentes y caracterización de una planta medicinal.
- Uso y control de una estación de datos para la gestión integral de un cromatógrafo.
- Optimización de las condiciones de separación para el desarrollo de un método analítico y su posterior validación.
- Procesamiento y análisis de datos a partir de programas de ordenador.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 José Ramón Torres Lapasió

ACADEMIC TUTOR 2 María Celia García Álvarez-Coque

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Clinical analysis of active pharmaceutical ingredients and their metabolites in biofluids by HPLC

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Proporcionar al estudiante una formación sólida y completa tanto en los fundamentos teóricos como en los aspectos prácticos de la cromatografía líquida de fase inversa.
- Introducir al estudiante en la metodología habitual de un trabajo de investigación: búsqueda bibliográfica, interpretación crítica, análisis riguroso y presentación de resultados (redacción de memorias, elaboración y lectura de artículos científicos, preparación de pósters para congresos, entre otros).
- Familiarizar al estudiante con el uso de programas informáticos específicos para la adquisición, tratamiento e interpretación de los datos experimentales, y presentación de resultados.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Preparación de eluyentes empleados en cromatografía líquida en fase inversa.
- Aprendizaje de la puesta a punto y operación de un sistema cromatográfico con gradientes de disolvente orgánico.
- Extracción e interpretación de información a partir de cromatogramas multianalito.
- Análisis de los componentes presentes y caracterización de una planta medicinal.
- Uso y control de una estación de datos para la gestión integral de un cromatógrafo.
- Optimización de las condiciones de separación para el desarrollo de un método analítico y su posterior validación.
- Procesamiento y análisis de datos a partir de programas de ordenador.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 JUAN PERIS VICENTE

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): QUÍMICA ANALÍTICA

TITLE (Mandatory in English)

Determination of food colorings by micellar liquid chromatography

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Training the student in the methodology applied in research: bibliographic search, development and execution of the work plan, and collection, analysis and interpretation of experimental data.
Delving into the use of HPLC instrumentation.
Knowledge on the use and advantages of micellar solutions as mobile phases in HPLC.
Preparation and public defense of a working report.
Study of the influence of chromatographic conditions on retention and other instrumental responses. Optimization of an analytical method through interpretive strategies.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

1. Bibliographic revision of the state-of-the-art.
2. Establishing the general experimental conditions and those that need to be studied. Design of the experimental design and preparation of the necessary solutions.
3. Experimental determination of the drugs as indicated in the experimental design.
4. Collection, statistical treatment and interpretation of experimental data. Evaluate the effect of mobile phase composition on retention by adjusting the modeling equation. Selection of the optimal analysis conditions.
5. Validation of the method.
6. Application to commercial samples

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Jorge Verdú Andrés

ACADEMIC TUTOR 2 Roberto Sáez Hernández

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

New sorbents to determine Polycyclic Aromatic Hydrocarbons (PAHs) in water samples

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To prepare and characterize different sorbents using cyclodextrins and calixarenes.
- To investigate the retention of different PAHs in modified sorbents using cyclodextrins and calixarenes.
- To use fluorescence spectroscopy, HPLC and colorimetry to identify and quantify PAHs in water samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

We will synthesize and characterize various silica-based sorbents using FTIR and NMR. These sorbents will then be applied to treat water samples containing Polycyclic Aromatic Hydrocarbons (PAHs) to assess their capacity for retaining these compounds. We'll test different extraction methods, including Solid Phase Extraction (SPE), dispersive extraction, and thin-layer extraction. Finally, the samples will be analyzed using various acquisition techniques such as fluorescence spectroscopy, High-Performance Liquid Chromatography with Fluorescence Detection (HPLC-FLD), and smartphone colorimetry.

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Maria Luisa Cervera Sanz

ACADEMIC TUTOR 2 Roberto Sáez Hernández

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Non destructive analysis of ancient iron oxide-based paintings

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To investigate ancient paintings using non destructive instrumentation.
- To apply portable analytical instruments, like FTIR, Raman, Colorimetry, and Visible reflectance spectroscopy.
- To properly work with complex chemical data using the adequate chemometric models.
- To interpret the chemical data within the archaeological context of the samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- First, a bibliographic search will be carried out on the topic.
- We will analytically investigate ancient iron-based paintings using various portable and non-destructive instruments, including FTIR, Raman, XRF, visible reflectance spectroscopy, and colorimetry.
- The samples will be measured using these different techniques, and the data will be analyzed by applying appropriate chemometric techniques to extract relevant chemical information.
- These results will subsequently be cross-referenced with archaeological information to enhance their interpretation.
- Last, a final degree report will be written.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Roberto Sáez Hernández

ACADEMIC TUTOR 2 Rafael Ballesteros Garrido

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Unmasking the Role of Phenols in Scottish Malts: Analytical Insights into Flavor-Active Compounds

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

To identify and quantify phenolic compounds in Scottish malt samples using advanced analytical techniques, investigate their influence on flavor profiles, and prepare control samples by smoking aqueous solutions with different wood types to simulate and compare phenolic profiles.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Phenolic compounds will be extracted from malt samples using solvent extraction methods optimized for maximum recovery. Quantification will be performed through high-performance liquid chromatography (HPLC) and gas chromatography–mass spectrometry (GC-MS), complemented by UV-Vis spectrophotometry for total phenolic content assessment. Calibration curves with authentic standards will be prepared to ensure accurate quantification of key phenols such as guaiacol and syringol. Additionally, control samples will be prepared by smoking aqueous solutions using different types of wood commonly employed in malt drying (e.g., peat, oak, beech). These controls will help correlate the phenolic profiles derived from wood smoke with those found in malt samples. The student will gain practical experience in sample preparation, chromatographic techniques, and data interpretation, developing a deep understanding of the chemical contributors to malt flavor and the analytical methods used in food chemistry.

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 HECTOR MARTINEZ PEREZ CEJUELA

ACADEMIC TUTOR 2 SERGIO ARMENTA ESTRELA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

Assessing the Potential of MOFs as Enzyme Mimics for Analytical Applications

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of an analytical methodology based on metal organic frameworks (MOFs) for the determination of analytes of interest.
Comparison of the enzyme activity of MOFs with that of the original enzyme.
Attachment of the MOF to a solid surface.
Evaluation of the enzyme like activity of the MOF linked to the solid surface.
Validation of the methodology in terms of linearity, precision, accuracy, LOD and LOQ.
Analysis of field samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Bibliographic review on the background of the MOFs as enzyme alternatives.
Selection of the most appropriate MOF considering the evaluated enzyme system.
Selection of the most adequate sorbent for MOF attachment.
Evaluation of the most appropriate experimental conditions for the analysis.
Validation of the analytical procedure.
Sample analysis.
Writing of the TFG report.

Annex I

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: M. LUISA CERVERA SANZ

ACADEMIC TUTOR (if needed): ÁNGEL E. MORALES RUBIO

EXTERNAL TUTOR (if needed):

Department: ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

ANALYSIS OF ARCHAEOLOGICAL CERAMICS USING NON-DESTRUCTIVE TECHNIQUES AND ICP-MS

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

-Development of analytical methodology for the analysis of archaeological ceramics.
-Direct detection of the major and minor components using XRF, FTIR and colorimetry.
-Crushing of the samples.
-Acid digestion process for the extraction of trace elements and detection by ICP-MS.
-Statistical treatment of the results obtained.

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

1.- Bibliographic review in the databases.
2.- Select the sample treatment parameters and the measurement conditions of the instrumentation used.
3.- Establish the analytical properties.
4.- Establish the appropriate calibration system for ICP-MS, XRF, FTIR and colorimetry.
5.- Analyze the archaeological ceramic samples.
6.- Write the TFG report.

(Department stamp)

Annex I

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: ÁNGEL E. MORALES RUBIO

ACADEMIC TUTOR (if needed): M. LUISA CERVERA SANZ

EXTERNAL TUTOR (if needed):

Department: ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

ANALYSIS OF NUTRIENTS IN LEAVES AND CROP SOILS.

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

-Development of analytical methodology for the analysis of leaves and crop soils.
-Direct detection of the macro and micronutrients using X-ray fluorescence.
-Crushing of the samples.
-Acid digestion process for the extraction of trace elements and detection by ICP-MS.
-Statistical treatment of the results obtained.

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

1.- Bibliographic review in the databases.
2.- Select the sample treatment parameters and the measurement conditions of the instrumentation used.
3.- Establish the analytical properties.
4.- Establish the appropriate calibration system for XRF and ICP-MS.
5.- Analyze leaves and soils, and establish relationships.
6.- Write the TFG report.

(Department stamp)

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 M. LUISA CERVERA SANZ

ACADEMIC TUTOR 2 SERGIO ARMENTA ESTRELA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

EVALUATION OF SAMPLE TREATMENTS FOR THE DETERMINATION OF AFLATOXIN M1 IN MILK

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Evaluation of different sample treatment methodologies including extraction, clean-up and analyte preconcentration procedures.
Development of an analytical methodology based on fluorescence measurements for the determination of aflatoxin M1 in milk.
Validation of the methodology in terms of linearity, precision, accuracy, LOD and LOQ.
Analysis of milk samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Bibliographic review on the background of the analysis of aflatoxin M1 in milk.
Evaluation of the most appropriate experimental conditions for sample treatment and analysis.
Validation of the analytical procedure.
Sample analysis.
Writing of the TFG report.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 ÁNGEL E. MORALES RUBIO

ACADEMIC TUTOR 2 SERGIO ARMENTA ESTRELA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

EVALUATION OF DIFFERENT SAMPLE TREATMENTS FOR THE ANALYSIS OF PAHs IN FOOD

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of an analytical methodology based on fluorescence measurements for the determination of PAHs in food.
Evaluation of different sample treatment methodologies including extraction, clean-up and analyte preconcentration procedures.
Validation of the methodology in terms of linearity, precision, accuracy, LOD and LOQ.
Analysis of food samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Bibliographic review on the background of the analysis of PAHs in food.
Evaluation of the most appropriate experimental conditions for sample treatment and analysis.
Validation of the analytical procedure.
Sample analysis.
Writing of the TFG report.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 ÁNGEL E. MORALES RUBIO

ACADEMIC TUTOR 2 SERGIO ARMENTA ESTRELA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

Analysis of psychoactive compounds in wastewater.

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of an analytical methodology based on liquid chromatography tandem mass spectrometry for the determination of psychoactive compounds in wastewater.
Validation of the methodology in terms of linearity, precision, accuracy, LOD and LOQ.
Analysis of wastewater samples.
Estimation of the consumption of psychoactive compounds from their concentration in wastewater.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Bibliographic review on the background of the analysis of psychoactive substances in wastewater.
Validation of the analytical procedure.
Sample analysis.
Estimation of the consumption of psychoactive substances.
Writing of the TFG report.

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Lorenzo Sanjuan Navarro

ACADEMIC TUTOR 2 Yolanda Moliner Martínez

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Emerging contaminants

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The objective of the proposed work is the development of characterization, separation and sample pretreatment methods for the study of emerging contaminats in matrices of interest, mainly environmental and biological samples. Firstly, sample pretreatment technique and detection technique will be selected as a function of the analysis requeriments. Subsequently, the validation and application of studied procedure will be evaluated for the analysis of real samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The methodology will be the following:

-Bibliographic review
-Selection of the emerging pollutants
-Selection of sample treatment and analysis techniques
-Optimization of experimental variables
-Sample analysis
-Preparation and elaboration of the report for the Final Degree Project.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Yolanda Moliner Martínez

ACADEMIC TUTOR 2 Lorenzo Sanjuan Navarro

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Chemical sensors for biomarkers study

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The objective of this project is the development of chemical sensors for the analytes of interest in samples, mainly biological. For this aim, sample treatment techniques will be applied to the analytes of interest. Detection will be based on analysis techniques such as portable optical spectroscopy and miniaturized chromatographic techniques, particularly, liquid chromatography with different detection systems (UV-vis and MS).

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The methodology is the following:

-Bibliographic review
-Selection of analytes and samples of interest
-Selection of sample treatment and analysis techniques
-Optimization of experimental variables
-Sample analysis
-Preparation and elaboration of the report for the Final Degree Project.

Annex 1 (**not to be printed**)

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Yolanda Moliner Martínez

ACADEMIC TUTOR 2 Lorenzo Sanjuan Navarro

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Assessment of microplastics using separation techniques

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The objective of this work is to develop and optimize methodologies for the characterization and separation of microplastics in environmental samples. Firstly, suitable pretreatment and detection technique will be selected as a function of the analysis requeriments. Subsequently, the validation and application of studied procedure will be assessed for the analysis of real samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The methodology is the following:

-Bibliographic review
-Selection of the microplastics
-Selection of sample treatment and analysis techniques
-Optimization of experimental variables
-Sample analysis
-Preparation and elaboration of the report for the Final Degree Project.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Carmen Molins Legua

ACADEMIC TUTOR 2 Lusine Hakobyan

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analitica

TITLE (Mandatory in English)

Isolation and Characterization of Extracellular Vesicles (EVs)

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The main objective of this study is the characterization of extracellular vesicles isolated from mesenchymal stem cells derived from dental pulp, focusing on the analysis of their size and the functional groups present on their surface using analytical techniques. Additionally, extracellular vesicles obtained from different dental pulp biopsies will be compared in order to assess potential variations between biological samples in terms of size and surface functional group composition.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Extracellular vesicles will be isolated from mesenchymal stem cells derived from dental pulp, obtained from different biopsies. The isolation process will involve tangential flow filtration (TFF) followed by size exclusion chromatography (SEC), ensuring high purity and structural integrity of the vesicles.

For size characterization, Dynamic Light Scattering (DLS) will be used to determine the average hydrodynamic diameter and size distribution in suspension. In addition, the zeta potential will be measured as an indicator of surface charge and stability.

To characterize the functional groups present on the vesicle surface, Fourier-transform infrared spectroscopy (FTIR) and Raman spectroscopy will be employed. These techniques enable the identification of molecular vibrations associated with specific chemical bonds, providing insights into the vesicles' surface composition.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Carmen Molins Legua

ACADEMIC TUTOR 2 Lusine Hakobyan

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analitica

TITLE (Mandatory in English)

Extraction and Physicochemical Characterization of Nanovesicles

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The main objective of this study is to characterize nanovesicles obtained by extrusion from mesenchymal stem cells derived from dental pulp, analyzing parameters such as size, zeta potential, and surface functional groups using specific analytical techniques. The study aims to assess how the production method influences the physicochemical properties of the vesicles.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Nanovesicles will be generated by sequential extrusion through polycarbonate membranes with defined pore sizes, using mesenchymal stem cells derived from dental pulp as the biological source. This method enables the production of vesicles with uniform size in a reproducible manner.
One of the main advantages of extrusion is that it is a fast, straightforward, and scalable technique, making it a promising option for large-scale vesicle production in clinical or industrial applications.

The physicochemical characterization of the nanovesicles will include:
Dynamic Light Scattering (DLS) to determine hydrodynamic size and size distribution;
Zeta potential measurement to assess colloidal stability;
FTIR and Raman spectroscopy to identify surface functional groups.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Neus Jornet Martínez

ACADEMIC TUTOR 2 Rosa Herráez Hernández

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Colorimetric sensors

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The goal of this project is the development of colorimetric sensors based on the immobilisation of the proper reagents onto different polymeric supports (PDMS, PMMA..) and using different preparation techniques. The obtained sensors will be characterized and evaluated regarding their analytical performance. Finally, the sensors will be applied to the analysis of different analytes and matrices.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The methodology to follow will be the following:

- Bibliographic review.
- Selection of articles of interest.
-Study of sample treatments and analytical performance
- Preparation of the report for the Final Degree Project.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Neus Jornet Martínez

ACADEMIC TUTOR 2 Rosa Herráez Hernández

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Analysis of drugs

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The goal of this project is the characterization of illegal substances that may be present in a variety of samples (dietary supplements, over-the-counter formulations...) . Depending on the sample features, different spectrophotometric (absorption diffuse reflectance) and chromatographic techniques will be used. Attention will be also devoted to the conditioning of the samples, and the study of potential interferences.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The methodology to follow will be the following:

- Bibliographic review.
- Selection of articles of interest.
-Study of sample treatments and analytical performance
- Preparation of the report for the Final Degree Project.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Enrique Javier Carrasco Correa

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

3D-Printed biomimetic solid-phase extraction platforms for the simulation of intestinal interactions

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To perform a literature review and database compilation of pharmacokinetic parameters.
- To design, 3D-print, and functionalize a biomimetic solid-phase extraction device.
- To establish in vitro biomimetic extraction conditions simulating the intestinal environment.
- To evaluate the influence of the extraction and behavior of model drugs and assess the system's ability to mimic in vivo data.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The project will begin with a literature review to identify intestinal relevant pharmacokinetic parameters. A 3D-printed solid-phase extraction device will be fabricated with a porous, hydrophilic polymer and functionalized with phosphatidylcholine to mimic the intestinal membrane. Simulated intestinal conditions will be applied during extraction experiments and the absorption level will be evaluated. Retention behavior, and interaction effects will be analyzed to assess the biomimetic system's predictive potential.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Enrique Javier Carrasco Correa

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Exploring functional stimuli-Responsive solid-phase extraction systems fabricated via 4D printing

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To explore and investigate the use of stimuli-responsive polymers (e.g. pH, temperature) for the fabrication of smart solid-phase extraction devices using 4D printing.
- To evaluate the dynamic control of analyte retention and release based on the responsive properties of the material.
- To evaluate the performance of the 3D-printed solid-phase extraction system in terms of extraction efficiency, selectivity, and reusability.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Stimuli-responsive polymers compatible with FDM printing will be selected and used to fabricate solid-phase extraction devices with dynamic geometries. The structural response of the devices to environmental changes (e.g., shape shift, pore modulation) will be characterized. The impact of this behavior on analyte retention and release will be evaluated using model compounds under variable conditions. Finally, the extraction efficiency and selectivity of the system will be characterized using model analytes and the analytical figures of merits will be evaluated.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Miriam Beneito Cambra

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

3D-printed extraction supports with dual stirring for solid-phase extraction of antibiotics

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The main objective of this project is to design and develop 3D printed devices that can be used as solid-phase extraction supports for antibiotic analysis. The work will focus on the chemical modification of the inner walls of the printed devices to anchor metal-organic frameworks (MOFs). Additionally, solid-phase extraction studies will be performed in dispersive mode to optimize the optimal conditions for both extraction and elution. Finally, the applicability of the developed system will be demonstrated through its use in the determination of antibiotics in real samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

In this work, 3D-printed devices will be designed and fabricated for use in the extraction and separation of antibiotics from aqueous samples. The printed pieces will be chemically modified to enable the anchoring of metal-organic frameworks (MOFs) inside the device's internal cavity. This MOF will act as materials to carry out targeted extraction for the antibiotics of interest. The final goal is to obtain a robust 3D-printed system containing a MOF and applied for the determination of antibiotics in real-world samples.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Miriam Beneito Cambra

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

3D-printed stir towers with MOF integrated for sustainable multi-analyte extraction of emerging contaminants

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The aim of this work is to design, fabricate and assess novel 3D-printed stirr towers containing cavities loaded with different Metal-Organic Frameworks (MOFs) to enable the simultaneous extraction of emerging contaminants from environmental samples. This work seeks to offer a rapid, low-cost and customizable sample preparation approach that can be adapted to a wide range of analytes by selecting suitable MOFs and functional materials.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The stirr towers will be designed using FreeCAD software and fabricated via resin-based 3D printing. After the printing, washing and curing steps, the device's cavities will be filled with a methacrylate polymer which will be chemically functionalized with iminodiacetic acid (IDA) to serve as anchoring sites for the layer-by-layer growth of MOFs. Selected MOFs based on different metals (e.g., Fe, Ce, Co, Zn) will be synthesized directly inside the cavities by sequential addition of metal and ligand solutions. The extraction capability of the stirr towers will be tested by immersing the devices directly in standard solutions placed inside HPLC vials. After extraction, the same vial will be used for HPLC-UV analysis, minimizing sample handling and solvent use. The performance of the system will be evaluated in terms of extraction efficiency, reproducibility and its adaptability to different contaminant families.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Héctor Martínez Pérez Cejuela

ACADEMIC TUTOR 2 José Manuel Herrero Martínez

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

Use of Metal-Organic Frameworks (MOFs) and MOFs@Enzyme Composites for Sensing Applications

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

-To develop innovative sensing strategies based on metal-organic frameworks (MOFs).
-To assess and compare the catalytic (enzyme-mimicking) activity of MOFs and MOF@enzyme hybrids with that of native enzymes.
-To evaluate the retained catalytic performance towards harassing conditions.
-To validate the proposed sensing methodologies and its application to real samples
-Writing reports.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Review the literature on MOFs as enzyme alternatives in sensing.
Select the most suitable MOF for the chosen enzymatic system.
Optimize experimental conditions for detection and study MOF function.
Validate the method (linearity, precision, accuracy, LOD, LOQ).
Analyze real or model samples.
Write and submit the TFG report.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Héctor Martínez Pérez Cejuela

ACADEMIC TUTOR 2 Ernesto Francisco Simó Alfonso

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

Hybridization of Enzymes with Functional Materials for Enhanced Catalytic Performance

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

-To review the existing literature and to design hybrid systems combining enzymes with functional materials.
-To enhance the catalytic activity and stability of enzymes through hybridization with enzyme models (e.g. BSA or Lac).
-To evaluate the catalytic performance of the hybrid materials under various conditions.
-To compare the behavior of hybrid systems with that of free enzymes.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

-Literature review on enzyme immobilization and hybrid material systems.
-Selection and preparation of functional materials (e.g., MOFs, nanoparticles, polymers).
-Immobilization or integration of enzymes into/onto the selected materials.
-Characterization of hybrid systems (e.g., SEM, FTIR, BET, enzymatic assays).
-Assessment of catalytic activity, stability, and reusability of the hybrids.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Héctor Martínez Pérez Cejuela

ACADEMIC TUTOR 2 Isabel Ten Doménech

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): ANALYTICAL CHEMISTRY

TITLE (Mandatory in English)

Development of Sensing Devices for the Determination of Total Lipid Content in Milk Samples

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

-To develop a simple sensing method for total lipid detection in milk.
-To select and optimize the appropriate sensing material or platform.
-To validate the method in terms of accuracy and sensitivity.
-To apply the method to real milk samples.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

-Review existing sensing approaches for lipid analysis.
-Prepare and calibrate the sensing device using lipid standards.
-Optimize key experimental parameters (e.g., sample volume, reaction time).
-Evaluate performance using real milk samples and compare with a reference method.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 María Jesús Lerma García

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S):

TITLE (Mandatory in English)

Determination of allergenic proteins using affinity low-cost extraction devices

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollo de sorbentes basados en redes metalorgánicas (MOFs) modificados con ligandos selectivos para el reconocimiento de proteínas alergénicas en alimentos.
- Caracterización morfológica del material y evaluación de la retención de los sorbentes diseñados.
- Aplicación a la extracción de proteínas alergénicas en muestras alimentarias.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Estudio de las condiciones experimentales de síntesis del sorbente, así como su anclaje sobre soportes celulósicos.
- Caracterización morfológica de los sorbentes sintetizados mediante técnicas espectroscópicas y de microscopia electrónica de barrido.
- Evaluación de la retención de la proteína en los materiales diseñados.
- Validación de la metodología analítica propuesta.
- Aplicación del método desarrollado al análisis de muestras reales.
- Preparación, discusión y revisión del proyecto final.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 María Jesús Lerma García

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S):

TITLE (Mandatory in English)

Aptasensor for the detection of toxins in foods

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollo de un sensor empleando aptámeros como ligando selectivo para la detección de toxinas en alimentos.
- Caracterización morfológica del aptasensor desarrollado.
- Aplicación del mismo a la detección de toxinas en muestras alimentarias.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Estudio de las condiciones experimentales de preparación del aptasensor.
- Caracterización morfológica del sensor mediante técnicas espectroscópicas y de microscopia electrónica de barrido.
- Evaluación del reconocimiento de la toxina en el aptasensor obtenido.
- Validación de la metodología analítica propuesta.
- Aplicación del método desarrollado al análisis de muestras reales.
- Preparación, discusión y revisión del proyecto final.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 María Vergara Barberán

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S):

TITLE (Mandatory in English)

Determination of emerging contaminants using affinity 3D-printed platforms

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Fabricación de piezas impresas en 3D para su posterior funcionalización con materiales porosos modificados con ligandos selectivos
- Caracterización morfológica de los dispositivos obtenidos.
- Aplicación de los dispositivos a la extracción/captura de contaminantes emergentes en aguas.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Revisión bibliográfica sobre los antecedentes relativos al empleo de soportes extractivos usando impresión 3D.
- Estudio de las condiciones experimentales para modificar los soportes y producir materiales porosos selectivos.
- Validación de la metodología analítica propuesta.
- Aplicación del método desarrollado al análisis de muestras reales.
- Preparación, discusión y revisión del proyecto final.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 María Vergara Barberán

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S):

TITLE (Mandatory in English)

Determination of marine toxins using low-cost supports modified with metal organic frameworks

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollo de sorbentes basados en redes metalorgánicas (MOFs) para la extracción de toxinas marinas.
- Caracterización morfológica del MOF y evaluación de la retención de los sorbentes diseñados.
- Aplicación a la extracción de toxinas marinas de productos del mar.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Estudio de las condiciones experimentales de síntesis del MOF y de su anclaje/deposición sobre materiales celulósicos.
- Caracterización morfológica de los sorbentes sintetizados mediante técnicas espectroscópicas y de microscopia electrónica de barrido.
- Evaluación de la retención de las toxinas marinas en los dispositivos diseñados.
- Validación de la metodología analítica propuesta.
- Aplicación del método desarrollado al análisis de muestras reales.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 José Manuel Herrero Martínez

ACADEMIC TUTOR 2 Isabel Ten Doménech

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Aptasensors based on dye-displacement assays for recognition of relevant biomarkers

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Design and develop aptamer-based sensors (aptasensors) utilizing dye-displacement assays for the selective and sensitive detection of clinically relevant biomarkers.
- Select and optimize suitable aptamer-dye pairs to enable competitive binding mechanisms, and effective displacement upon target binding.
- Evaluate the analytical performance of the developed aptasensors in terms of sensitivity, detection limits, and response time.
- Test the applicability of the aptasensors in real sample matrices such as biological fluids (e.g., saliva or urine).

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Literature review on aptasensor platforms and dye-displacement assay strategies.
- Identify a relevant biomarker (e.g., cytokines, lysozyme, etc.) with clinical significance and with known aptamer sequences.
- Screen different intercalating or fluorogenic dyes for optimal binding and signal response.
- Develop the aptasensor using a dye-displacement format, and optimize conditions (e.g., buffer composition, pH, temperature, dye-to-aptamer ratio) for maximal signal change upon displacement.
- Evaluate the sensor's performance (LOD, dynamic range, selectivity, reproducibility, etc.)
- Apply the optimized aptasensor to real samples (e.g., spiked biological fluids) to evaluate matrix effects and practical usability.
- Preparation, discussion, and review of the final project.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 José Manuel Herrero Martínez

ACADEMIC TUTOR 2 Ernesto Francisco Simó Alfonso

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Development of 3D-printed polymer substrates for in situ generation of metal-organic frameworks as extraction systems of emerging pollutants

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To design and fabricate 3D-printed polymer substrates suitable for posterior in situ synthesis of Metal-Organic Frameworks (MOFs) from polymerization mixtures.
- To develop and optimize protocols for the in situ generation of MOFs directly on the 3D-printed substrates.
- To characterize the structural and chemical properties of the resulting MOF-functionalized materials.
- To evaluate the performance of the composite materials in extraction of pollutants

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Functionalizable resins for 3D printing will be developed.
Once the piece is printed, it will be derivatized with MOFs.
Two strategies will be proposed for MOF anchoring. First, MOFs will be attached directly onto the surface of the printed pieces.As a second strategy, layer-by-layer growth of the MOF on the surface of the piece will be explored.
The modified pieces will be used for the extraction of emerging contaminants.

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VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 José Manuel Herrero Martínez

ACADEMIC TUTOR 2 Emilio Pardo Marín

EXTERNAL TUTOR (if needed):

DEPARTMENT(S):

TITLE (Mandatory in English)

Development of sustainable 3D-printed supports decorated with biometal-organic frameworks

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Design and development of 3D-printed parts made from sustainable materials.
- Modification of 3D-printed supports with biometal-organic frameworks (bioMOFs)
- Characterization of the developed materials
- Evaluation of the developed materials for the extraction/capture of emerging contaminants in water

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Literature review on the background related to the use of sustainable supports obtained through 3D printing.
- Study of experimental conditions for modifying the supports and producing bioMOFs.
- Morphological characterization of the synthesized materials using various techniques (SEM, FTIR, XRD, among others).
- Validation of the proposed analytical methodology.
- Application of the developed method to the analysis of real samples.
- Preparation, discussion, and review of the final project.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Ernesto Francisco Simó Alfonso

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química analítca

TITLE (Mandatory in English)

Use of 3D Printing for the Selective Extraction of Proteins

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of new compatible resins for 3D printing

Application of selective extraction systems

Evaluation of optimal extraction conditions

Application to real samples

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Different mixtures of potential monomers will be studied, as well as the addition of various modifiers.

Selective systems such as aptamers will be used for the retention of target proteins.

The anchoring of these systems onto the designed 3D-printed pieces will be evaluated.

The various parameters associated with the extraction process will be optimized.

The developed method will be applied to the extraction of proteins from real samples.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Enrique Javier Carrasco Correa

ACADEMIC TUTOR 2 José Manuel Herrero Martínez

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Development of a solid-phase extraction system using 4D Printing with stimuli-responsive materials

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- To design and print functional prototype of a solid-phase extraction device using stimuli-responsive polymers suitable for 3D printing.
- To optimize the printing parameters for manufacturing reproducible and chemically stable devices.
- To evaluate the performance of the 3D-printed solid-phase extraction system in terms of extraction efficiency, selectivity, and reusability.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

The project will begin with the design of a solid-phase extraction (SPE) device using CAD software. Selected stimuli-responsive polymers compatible with FDM 3D printing will be characterized and processed to fabricate the SPE components. Printed devices will be tested for responsiveness to external stimuli (e.g., pH, temperature). Finally, the extraction efficiency and selectivity of the system will be characterized using model analytes and the analytical figures of merits will be evaluated.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 ALBERTO CHISVERT SANÍA

ACADEMIC TUTOR 2 JUAN LUIS BENEDÉ VEIGA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): QUÍMICA ANALÍTICA

TITLE (Mandatory in English)

Development of high-throughput methods for bioanalysis

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollar un método analítico basado en técnicas de microextracción para la determinación de biomarcadores de interés relacionados con algún proceso patológico
- Estudiar y seleccionar las variables instrumentales en el intrumento de medida (cromatografía de líquidos o de gases, acoplada a espectrometría de masas) según el/los analito/s objeto de estudio
- Estudiar y seleccionar las condiciones de extracción más favorables para el/los compuesto/s objeto de estudio
- Validar el método analítico desarrollado
- Aplicar el método analítico desarrollado al análisis de muestras de fluidos biológicos
- Redactar en forma de memoria los experimentos realizados, con especial énfasis en la discusión de los resultados obtenidos y conclusiones derivadas de los mismos

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Se seleccionarán el/los analito/s de interés, en base a las necesidades de las líneas de investigación del grupo de investigación al que se incorpore el/la estudiante en el momento de iniciación del TFG
- Se seleccionarán las técnicas de microextracción, tanto en fase sólida como en fase líquida que resulten más apropiadas para el problema a resolver
- Se seleccionará la técnica analítica (cromatografía de líquidos o cromatografía de gases, ambas acopladas a espectrometría de masas) que resulte más apropiada según el/los analito/s de interés
- Se realizarán estudios de optimización tanto en la etapa de medida como en la etapa de extracción
- Se validará el método analítico en base a parámetros como linealidad, límites de detección/cuantificación, exactitud, precisión, etc
- Se aplicará el método al análisis de muestras reales, con especial énfasis en el estudio de coeficientes de recuperación
- Se redactarán los experimentos realizados en forma de memoria, en base a la normativa de TFG de la Facultad de Química de la Universitat de València

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 JUAN LUIS BENEDÉ VEIGA

ACADEMIC TUTOR 2 ALBERTO CHISVERT SANÍA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): QUÍMICA ANALÍTICA

TITLE (Mandatory in English)

Microextraction strategies for the determination of biomarkers in biological fluids

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollar un método analítico basado en técnicas de microextracción para la determinación de biomarcadores de interés relacionados con algún proceso patológico
- Estudiar y seleccionar las variables instrumentales en el intrumento de medida (cromatografía de líquidos o de gases, acoplada a espectrometría de masas) según el/los analito/s objeto de estudio
- Estudiar y seleccionar las condiciones de extracción más favorables para el/los compuesto/s objeto de estudio
- Validar el método analítico desarrollado
- Aplicar el método analítico desarrollado al análisis de muestras de fluidos biológicos
- Redactar en forma de memoria los experimentos realizados, con especial énfasis en la discusión de los resultados obtenidos y conclusiones derivadas de los mismos

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Se seleccionarán el/los analito/s de interés, en base a las necesidades de las líneas de investigación del grupo de investigación al que se incorpore el/la estudiante en el momento de iniciación del TFG
- Se seleccionarán las técnicas de microextracción, tanto en fase sólida como en fase líquida que resulten más apropiadas para el problema a resolver
- Se seleccionará la técnica analítica (cromatografía de líquidos o cromatografía de gases, ambas acopladas a espectrometría de masas) que resulte más apropiada según el/los analito/s de interés
- Se realizarán estudios de optimización tanto en la etapa de medida como en la etapa de extracción
- Se validará el método analítico en base a parámetros como linealidad, límites de detección/cuantificación, exactitud, precisión, etc
- Se aplicará el método al análisis de muestras reales, con especial énfasis en el estudio de coeficientes de recuperación
- Se redactarán los experimentos realizados en forma de memoria, en base a la normativa de TFG de la Facultad de Química de la Universitat de València

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 JUAN LUIS BENEDÉ VEIGA

ACADEMIC TUTOR 2 ALBERTO CHISVERT SANÍA

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): QUÍMICA ANALÍTICA

TITLE (Mandatory in English)

Advances in the use of magnetic sorbents in microextraction techniques

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Desarrollar un método analítico basado en técnicas de microextracción para la determinación de biomarcadores de interés relacionados con algún proceso patológico
- Estudiar y seleccionar las variables instrumentales en el intrumento de medida (cromatografía de líquidos o de gases, acoplada a espectrometría de masas) según el/los analito/s objeto de estudio
- Estudiar y seleccionar las condiciones de extracción más favorables para el/los compuesto/s objeto de estudio
- Validar el método analítico desarrollado
- Aplicar el método analítico desarrollado al análisis de muestras de fluidos biológicos
- Redactar en forma de memoria los experimentos realizados, con especial énfasis en la discusión de los resultados obtenidos y conclusiones derivadas de los mismos

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Se seleccionarán el/los analito/s de interés, en base a las necesidades de las líneas de investigación del grupo de investigación al que se incorpore el/la estudiante en el momento de iniciación del TFG
- Se seleccionarán las técnicas de microextracción, tanto en fase sólida como en fase líquida que resulten más apropiadas para el problema a resolver
- Se seleccionará la técnica analítica (cromatografía de líquidos o cromatografía de gases, ambas acopladas a espectrometría de masas) que resulte más apropiada según el/los analito/s de interés
- Se realizarán estudios de optimización tanto en la etapa de medida como en la etapa de extracción
- Se validará el método analítico en base a parámetros como linealidad, límites de detección/cuantificación, exactitud, precisión, etc
- Se aplicará el método al análisis de muestras reales, con especial énfasis en el estudio de coeficientes de recuperación
- Se redactarán los experimentos realizados en forma de memoria, en base a la normativa de TFG de la Facultad de Química de la Universitat de València

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Francesc A. Esteve Turrillas

ACADEMIC TUTOR 2 Olga Pardo Marín

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Advanced Analytical Strategies for the Quantification of Mycotoxins in Urine Samples

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development and validation of an analytical methodology for the determination of mycotoxins in urine by liquid chromatography - tandem mass spectrometry.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

1. Bibliographic review of the methodologies published to date.
2. Development of an analytical methodology for the detemination of mycotoxins in urine.
3. Validation of the proposed methodology.
4. Analysis of samples.
5. Writing the TFG report.

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Francesc A. Esteve Turrillas

ACADEMIC TUTOR 2 David Pérez Guaita

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Characterization of the Metabolism of New Psychoactive Drugs

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of an analytical methodology for the identification of drugs metabolites using in-vitro cells and liquid chromatography - high resolution mass spectrometry.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

1. Bibliographic review of the methodologies published to date.
2. Development of an analytical methodology for the identification of drugs metabolites.
3. Assessment of the metabolic patway of drugs
4. Writing the TFG report.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Miguel de la Guardia Cirujeda

ACADEMIC TUTOR 2 Francesc A. Esteve Turrillas

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Química Analítica

TITLE (Mandatory in English)

Identification of organic residues in archaeological samples by gas chromatography-mass spectrometry

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of an analytical methodology for the identification of organic residues in archaeological samples by gas chromatography-mass spectrometry.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

1. Bibliographic review of the methodologies published to date.
2. Development of an analytical methodology for the identification of organic residues in archaeological samples.
4. Analysis of archaeological samples.
5. Writing the TFG report.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Miguel de la Guardia

ACADEMIC TUTOR 2 David Pérez Guaita

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

FT IR Method Development for Marijuana Analysis

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Establish optimal measurement conditions for mid-infrared spectral acquisition of marijuana.

- Apply machine learning techniques for quantifying key chemical parameters in marijuana and for classifying important cannabis categories.

- Investigate the feasibility and effectiveness of portable near-infrared spectroscopy for on-site marijuana analysis.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Students will have the opportunity to actively engage in diverse analytical and machine learning methodologies:

- Develop standardized procedures for sample handling (e.g., drying, grinding, homogenizing) to minimize variability.

- Acquire a comprehensive spectral dataset covering a wide range of marijuana samples with known chemical profiles.

- Application of machine learning methods (SVM, ANN, RF) for both quantification of chemical parameters and classification of cannabis varieties. Development of end-user apps.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 David Pérez Guaita

ACADEMIC TUTOR 2 Salvador Garrigues Mateo

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Identification of NPS by IR spectroscopy

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Development of rapid and direct methodologies for the identificaion of NPS in NIR.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Literature review.
- Selection of analysis parameters and signal processing.
- Evaluation of the characteristics and validation of the proposed method.
- Application to the analysis of samples from seizures.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Olga Pardo García

ACADEMIC TUTOR 2 David Pérez Guaita

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Identification and discrimination of proteins in clinical samples using spectroscopic techniques.

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Investigation of key integrated preprocessing methods for effective preconcentration of simple proteins.
- Comprehensive evaluation and comparison of preprocessing approaches to assess efficiency, reproducibility, and compatibility with downstream analysis.
- Optical characterization of protein samples using multiple spectroscopic techniques, including MID-Infrared, Near-Infrared (NIR), and UV-Visible (UV-Vis) spectroscopy.
- Development and application of machine learning models to predict protein concentration and classify major protein types based on spectral data.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Students will have the opportunity to actively engage in diverse optical methodologies: Apply and compare integrated protein preconcentration techniques to enhance sample quality for spectroscopic analysis.

Perform optical measurements using NIR, Raman, and UV-Vis spectroscopy on preprocessed protein samples.

Preprocess and analyze spectral data using chemometric and statistical techniques to extract meaningful features.

Develop and validate machine learning models to predict protein concentrations and classify major protein types.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Francesc A. Esteve Turrillas

ACADEMIC TUTOR 2 Salvador Garrigues Mateo

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Applications of Automatic Sampling Systems in Environmental Water Monitoring

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

Applications of automatic sampling systems for the monitoring of environmental waters

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Literature review
- Evaluation of the characteristics and validation of the proposed method.
- Application to the analysis of samples.

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Enrique Javier Carrasco Correa

ACADEMIC TUTOR 2 Ernesto Francisco Simó Alfonso

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Origami-inspired 3D-printed devices for the detection of proteins in food matrices

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

- Design and fabrication of origami-inspired 3D-printed devices intended for protein sensing in complex food matrices.
- Morphological and structural characterization of the fabricated devices.
- Evaluation of the protein detection performance in model and real food samples.
- Application of the developed devices to the detection of proteins in commercial food products.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

- Design and 3D-printing of foldable (origami-like) polymeric structures using suitable printing technologies (FDM).
- Morphological and structural characterization using scanning electron microscopy (SEM) and other techniques (e.g., FTIR, XRD if relevant).
- Evaluation of protein sensing under controlled conditions using model protein solutions - Analytical validation of the detection method in terms of selectivity, sensitivity, and reproducibility.
- Application of the optimized method to real food samples after appropriate sample preparation.

Annex I

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: Mª José Medina Hernández

ACADEMIC TUTOR (if needed): Yolanda Martín Biosca

EXTERNAL TUTOR (if needed):

Department: Química Analítica

TITLE (Mandatory in English)

Enantioseparation of chiral compounds in liquid chromatography using a vancomycin stationary phase

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

Evaluar la potencialidad de una fase estacionaria quiral del antibiótico macrocíclico vancomicina para la separación de los enantiómeros de compuestos con diferentes propiedades fisicoquímicas

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

Los estudios se llevarán a cabo en cromatografía líquida. Se emplearán fases móviles hidro-orgánicas. Se estudiarán las condiciones experimentales que pueden afectar a la resolución de los enantiómeros. Los estudios se llevarán a cabo con compuestos orgánicos quirales de uso cotidiano.

(Department stamp)

Annex I

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: Yolanda Martín Biosca

ACADEMIC TUTOR (if needed): Mª José Medina Hernández

EXTERNAL TUTOR (if needed):

Department: Química Analítica

TITLE (Mandatory in English)

Enantioseparation of chiral compounds in liquid chromatography using a macrocyclic antibiotic stationary phase

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

Evaluar la potencialidad de una fase estacionaria quiral de un antibiótico macrocíclico para la separación de los enantiómeros de compuestos con diferentes propiedades fisicoquímicas

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

Los estudios se llevarán a cabo en cromatografía líquida. Se emplearán fases móviles hidro-orgánicas. Se estudiarán las condiciones experimentales que pueden afectar a la resolución de los enantiómeros. Los estudios se llevarán a cabo con compuestos orgánicos quirales de uso cotidiano.

(Department stamp)

Annex I

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: Laura Escuder Gilabert

ACADEMIC TUTOR (if needed): Yolanda Martín Biosca

EXTERNAL TUTOR (if needed):

Department: Química Analítica

TITLE (Mandatory in English)

Enantioseparation of chiral compounds in liquid chromatography using a teicoplanin stationary phase

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

Evaluar el potencial de una fase estacionaria quiral basada en el antibiótico macrocíclico teicoplanina para la separación de enantiómeros de compuestos con propiedades fisicoquímicas diversas.

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

Los estudios se realizarán mediante cromatografía líquida utilizando fases móviles hidro-orgánicas. Se evaluarán distintas condiciones experimentales que puedan influir en la resolución enantiomérica. Los ensayos se llevarán a cabo con compuestos orgánicos quirales de uso común.

(Department stamp)

Annex I

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR: Pilar Campíns Falcó

ACADEMIC TUTOR (if needed):

EXTERNAL TUTOR (if needed):

Department: Química analítica

TITLE (Mandatory in English)

Miniaturized liquid chromatography to assess the presence of pollutants in environmental matrices

OBJECTIVES / OBJECTIUS / OBJETIVOS (Choose the language)

The objective of this project is the study of miniaturized liquid chromatography techniques for their application in environmental matrices. In addition, their on-line coupling with in-tube solid phase microextraction will be studied.

METHODOLOGY / METODOLOGIA / METODOLOGÍA (Choose the language)

The methodology to follow will be the following:
-Bibliographic review
-Selection of pollytants of interest
-Optimization of experimental variables
-Analysis of real samples
-Preparation and elaboration of the report for the Final Degree Project

(Department stamp)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Antonio Doménech carbó

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Logistic descripion of electron transfer processes under diffusion control

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The proposal of a theoretical model, based on logistic growth formalisms, aimed to describe electron-transfer processes occurring under diffusive control. These are the basic processes in analytical electrochemistry and the idea is to achieve a formulation that simplifies the existing approaches requiring numerical integrations.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Theoretical analysis and comparrison of the predicions from different models

Annex 1 (**not to be printed**)

VNIVERSITAT DE VALÈNCIA Facultat de Química

DEGREE FINAL PROJECT
CHEMISTRY DEGREE

ACADEMIC TUTOR 1 Antonio Doménech carbó

ACADEMIC TUTOR 2

EXTERNAL TUTOR (if needed):

DEPARTMENT(S): Analytical Chemistry

TITLE (Mandatory in English)

Asymptotic modeling of electroanalytical determinations in complex matrices

OBJECTVES / OBJECTIUS / OBJETIVOS: (Choose the language)

The proposal of a theoretical model aimed to model the current/concentration calibration graphs appearing in the determination of an electroactive analyte in the presence of a complex matrix where cross-rection can occur.

METHODOLOGY / METODOLOGIA / METODOLOGÍA: (Choose the language)

Theoretical analysis and comparrison of the predicions from different models and available experimental data for the determination of neutrotransmitters in biological fluids