AIM OF THE CENTRE

Centre for Applied Chemistry and Biotechnology (CQAB) was designed and created in order to facilitate the collaboration between academic research groups and companies in in different R&D projects focused on Chemical-Pharmaceutical, biomedicine, food, cosmetics, environment, materials and energy sectors.

It began its activity in 1998 under the name of Pilot Plant for Fine Chemistry (PPQF). Currently, the centre is divided into three sections: Pilot Plant for Fine Chemistry (PPQF, Organic Synthesis); Bioanalysis and Quality Control Unit (UBACC) and Biotechnology Unit (UB).

Actually, CQAB occupies 3,500 m2 and has 26 fully equipped laboratories and eight ATEX industrial rooms. In addition, it has some areas dedicated to storage, services and auxiliary facilities needed for the three units and spaces for management and administration of the Centre. Moreover, the Centre has a modern facilities for carrying out processes that require special working conditions (hydrogenation, pressure reactions, etc.).

Under the modality of University-Company cooperative projects, R&D contracts tailored to your needs, services and technical advice. The CQAB develops its activities in the following areas: chemical synthesis at different scales (mg-kg); analytical chemistry; biotechnology and materials science for high added value applications. The CQAB also carries out training activities by teaching master's degrees and specialized courses. The laboratories that form part of the CAI in CQAB belong to the Network of Laboratories and Infrastructures of the Community of Madrid.

ADDRESS

CENTRO DE QUÍMICA APLICADA Y BIOTECNOLOGÍA
Campus Universitario
Carretera Madrid-Barcelona, km. 33,6.
28805-Alcalá de Henares (Madrid)
SPAIN

INFORMATION

Dr. José Luis Novella, Director Técnico, Centre for Applied Chemistry and Biotechnology of the UAH.

jl.novella@uah.es

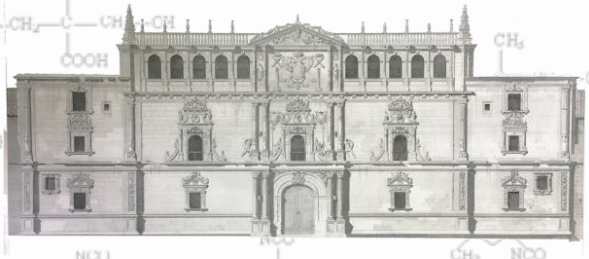
Phone.: +034-918855068.

http://www.cqab.eu

Universidad de Alcalá

FUNDACIÓN GENERAL UNIVERSIDAD DE ALCALÁ

UNIVERSITY-COMPANY COLLABORATION PROJECTS



CENTRE FOR APPLIED CHEMISTRY AND BIOTECHNOLOGY

PILOT PLANT FOR FINE CHEMISTRY

- Synthesis and development of new drugs and molecules with high added value.
- Optimization of lead products.
- Improved synthetic methods for generic drugs.
- Synthesis of non-commercial products and intermediates up to kilolab scale.
- Elucidation and synthesis of impurities, degradation products and metabolites of APIs and drugs.
- Synthesis of peptides.
- Synthesis of nitrosamine´s standards of APIs.
- Synthesis of pilot batches of drugs in development for preclinical use.
- Integration of "green" technologies in industrial chemical production.
- Preparation of Drug Master File and technical documentation.




Equipment:

- 15 Jacketed reactors from 5 to 30L with temperature control between +200 and -40 °C.
- 5 and 20L reactors with temperature control from -90 °C.
- 250mL, 4L and 25L stainless steel reactors able to work up to 25 bars.
- 4 Rotavapors of 20L.
- 2 Vitrified 50L reactors.
- 100L vitrified reactor.
- 400L vitrified reactor.

BIOANALYSIS AND QUALITY CONTROL

- Development and validation of analytic methods for the determination of active ingredients and related substances in pharmaceutical products using HPLC and LC-MS/MS.
- Identification of unknown compounds (impurities or degradation products) in the pharmaceutical ingredients using LC-HRMS.
- Development of analytical methodologies for the determination of unknown compounds (metabolites, impurities, …) in different fields (pharmaceutical, biomedical, environmental and food) using LC-HRMS/MS.
- Development of analytical methods for the detection and quantification of nitrosamines, extractables and leachates and their applicability to quality control in raw materials and medicines.
- Discovery and validation of markers related to the state of a disease, pathology, food authenticity or toxicity of chemical substances using LC-HRMS/MS.
- Other bioanalytical determinations using HPLC, LC-MS, GC, GC-MS.

Equipment:

- 6 HPLC with diode array detection (DAD).
- HPLC with light scattering (ELSD), fluorescence and DAD.
- GPC/SEC with multi-detector DAD, viscosity and refractive index.
- HPLC UV-semi-preparative .
- HPLC-MS(Q).
- BioUHPLC-QqQ (MS-MS).
- UHPLC-HRMS (UHPLC-Orbitrap).
- Chromatograph with conductivity detection.
- CG-FID/MS (split/splitless and head-space).
- CG-FID/MS with termal desorption.
- CE with DAD.
- UV-Vis.
- Spectrometer FTIR.
- Spectrofluorimeter.
- Titrators.
- Karl Fischer, ...

BIOTECHNOLOGY

- Design and scaling up of biotechnological processes related to health or the environment (soil, water and waste).
- Synthesis and purification of proteins generated from recombinant microorganisms.
- Enzymatic synthesis reactions to produce pharmaceutical products and materials.
- **Equipment:**
- 2 Biosafety cabinet.
- 2 Orbital incubators.
- 2 Bioreactors of 2L.
- Bioreactor of 22L.
- Tangential filtration,...


MATERIALS

- Synthesis and characterization of adhesives.
- Design and optimization of asphalt mixtures.
- Characterization of polymer properties.
- Development of new polymer formulations for pharmaceutical and construction use.
- Design of drug release systems.
- Synthesis and characterization of biopolymers.
- Valorization of biomass and biomass waste.
- Recycling of plastics into raw materials.

Equipment:

- TGA.
- DSC.
- DSR.
- Particle size.
- Mechanical testing machine.
- Bomb calorimeter.