

Prepared Consumer Food Centre Portfolio



The Prepared Consumer Food Centre (PCFC) has been established by the Department of Agriculture, Food and the Marine in consultation with Teagasc, Food Drink Ireland's Prepared Consumer Food company members, Enterprise Ireland and Bord Bia, to support research, development and innovation in the Prepared Consumer Food sector.

Innovation is a key driver of economic growth and Teagasc continues to be committed to supporting science-based innovation and the delivery of related services to the Irish Prepared Consumer Food (PCF) sector. Teagasc recognises the diversity and complexity of the sector and offers specialist know-how, facilities and services from its Ashtown Food Research Centre in the broad areas of:

- Meat products
- Cereal, breads, biscuits and bakery technology
- Fruit and vegetable-based products
- Savoury snacks
- Other food preparations including ready meals, sauces, confectionary
- Non-alcoholic beverages

The vision for the PCFC is to support companies in piloting industry-led collaborative research and innovation capability, to maximise value creation opportunities and address the challenges across the industry. It will enable the adaption of technology to enhance consumer demands, increase competitiveness and ensure sustainability.

The Centre contains state-of-art pilot scale processing equipment which PCF companies can use for research and development in collaboration with Teagasc and other innovation support organisations. It also encompasses access to modern analytical and sensory laboratories to characterise foods in terms of nutritional, compositional, microbial and sensory profiles allowing complete product and process development.

Teagasc is delighted to outline here, some of the main components and contact points within the Centre. PCF companies are encouraged to avail of the use of the Centre within their own research and development strategies and/or by using the innovation support programmes provided by Enterprise Ireland.



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Food Product Innovation

Chamber Drying System AIRGENEX® food

Capabilities

- Gentle drying at low temperature
- High quality drying results in short times
- Drying in a closed system
- Positive results in terms of bioactivity, aromas and appearance
- Temperature variable between 20°C - 90°C

Applications

- Crispy Nuts and Seeds
- Sprouted Flours
- Yogurt
- Jerky
- Sourdough
- Fruit Leathers
- Natto



For more information contact: Tara Heffernan at tara.heffernan@teagasc.ie, +353 (0)1 8059926

Firex Cucumix

Capabilities

- Electric tilting bratt pan
- Direct heating and built-in mixer
- 70-litre capacity
- Rotation in both directions
- Speed regulation and time adjustment.

Applications

- Vegetables
- Chocolate
- Braised foods
- Confectionery
- Sweet and savory sauces
- Ready meals
- Homogenised products



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Blast Chiller

Capabilities

- Freezing Capacity +70 to -18 °C in 240 min, kg
- Cooling capacity +70 to +3 °C in 90 min, kg
- Capacity: 14 gastro trays
- Core sensor with programmable thermostat

Applications

- Liquids
- Solids
- Ready meals



For more information contact: Shivani Pathania at shivani.pathania@teagasc.ie, +353 (0)1 8059762

Y-Tron Jet Mixer Impeller Model ZC

Capabilities

- Suitable for dispersing difficult, wet gums as well as bulk materials
- Provides an air-free, homogeneous mix
- Dispersion of very high solids contents in a single pass

Applications

- Thickeners and gums, stabilizing and gelling agents
- Milk and whey based proteins
- High viscosity liquids such as sugar syrup and chocolate



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Qbo Universal Processing Systems

Capabilities

- Three machines with capacities of 25L, 40L and 120L
- Evaporation cooking
- Blast chilling
- Cutting, mixing and homogenising
- Concentrates and vacuum cooking
- Ultra rapid product concentration processes
- Capable of preserving the nutritional properties of food
- Temperature control probe inside the sample

Applications

- Ready Meals
- Doughs
- Concentrates
- Chocolate
- Icecream
- Confectionary



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Mercatus Blast Chiller/Freezer Y2-3 Range

Capabilities

- Freezing Capacity: +70 to -18 °C 6 kgs in 240 min
- Chilling capacity: +70 to +3 °C 10 kg in 90 min
- Capacity: 3 gastro trays
- Core sensor and programmable thermostat

Applications

- Liquids
- Solids
- Ready meals



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Table Top Filling Machine – Riggs Autopack

Capabilities

- Deposit range of 125ml to 1200ml per cycle
- Stainless steel hopper with a nominal capacity of 40L
- Accurate depositing of hot or cold semi-liquid and solids-in-suspension products
- Controlled operation and foot pedal for fill start.

Applications

- Ready meals
- Sauces
- Cake mixes
- Fillings



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Silverson Homogeniser AX Pilot Scale

Capabilities

- Mixing
- Emulsifying
- Homogenising
- Disintegrating
- Dissolving
- Capacity from 100ml up to 12 litres

Applications

- Soft drinks
- Smoothies
- Brewing & distillery
- Confectionery
- Dairy products including; ice cream, yoghurt, spreads, mousses
- Baby milk and infant formula
- Ingredients and flavour emulsions
- Sauces & dressings



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Robot Cook

Capabilities

- Emulsifying, grinding, blending, chopping, mixing, kneading
- Speed 100 to 4500rpm
- Temperature Range 0°C to 140°C
- 3.7 litre stainless steel bowl capacity

Applications

- Sweet/Savoury Food Preparations
- Liquid/Powder Applications
- Hot/cold Food Preparations



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Robot Coupe Vegetable Preparation Machine (CL 60 WORKSTATION)

Capabilities

- Grating, Dicing, Slicing, Chopping, Mashing
- Automatic Feed Head for all vegetables in bulk
- Pusher Feed Head specially intended for bulky vegetables
- 4 tubes feed head specially intended for long, delicate vegetables
- Multi-cut pack of 16 discs included
- Output per hour: up to 1800kg/hr

Applications

- All vegetables including:
- Bulky Vegetables (cabbage or celeriac)
 - Long, delicate vegetables (cucumbers, courgettes)



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Merrychef E3 Rapid Cook Oven

Capabilities

- Combination of microwave and convection cooking
- Reduced cooking times
- Built-in touch screen

Applications

- Ready to eat snacks
- Baked products



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Robot Coupe Blixer 23

Capabilities

- Cross between a blender and a cutter/mixer
- Speeds of up to 3600 rpm
- Purees most foods without the need for additional liquids
- 4 to 15 kg capacity

Applications

- Hummus
- Vegetarian and Mediterranean spreads
- Processing of herbs, spices, seaweed in to fine powders



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STERIL-FOOD COM 80 Food Pasteuriser

Capabilities

- Temperature range 40°C - 121°C
- 80 Litre capacity
- Temperature control probe inside the sample
- Counter pressure system to prevent can breakage
- Temperature, time and pressure registered on USB

Applications

- Suitable for small production and a wide variety of food products
- Sterilisation of preserved foods



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Touchclave-E Autoclave

Capabilities

- 60 Litre Capacity
- Retort
- Steriliser
- Repeatable results which are scalable

Applications

- Vegetables
- Fish
- Ready meals
- Pet foods
- Beverages
- Sweet and savoury sauces
- Baby foods
- Plant based meals



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Sous Vide Equipment

Capabilities

- Sous Vide units (14, 28, 56 litres capacities)
- Precise temperature control
- Integrated timers (1 minute up to 99 hours)

Applications

- Meat (especially tough cuts)
- Fish
- Vegetables
- Eggs
- Fruit eg. Quince purees
- Ready meals



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Deck Oven

Capabilities

- Reinforced self-contained heating elements on top and bottom of each deck (4 decks)
- Digital independent steam generator in each deck
- Oven decks lined with stone slabs for stone baking
- Pre-set baking programs available
- Automatic control panel

Applications

- Snacks and crisps
- Oven-baked rolls
- Pastries
- Wide range of breads



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Roll-in Combi Rack Oven

Capabilities

- Capacity for 20 trays
- Hot air cooking, steam cooking, combination cooking
- Mobile/roll-in racks and trays
- Automatic programming, with a wide range of different cooking programmes

Applications

- Baking
- Roasting
- Cooking



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Planetary Mixer

Capabilities

- 30 litre capacity
- Adjustable mixing speed
- Attachments for mixing doughs/batters, mincing meat and slicing vegetables

Applications

- Yeasted doughs
- Sponge cake, muffins
- Egg whites
- Mayonnaise
- Icing
- Mincing meat
- Slicing vegetables



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Novel Protein Development Suite

Clextral Twin Screw Co-rotating Food Extruder Evolum EV25

Capabilities

- 25mm screw diameter, L:D ratio of 24, options to test 6 to 10 barrels with cooling circuit and electrical heater
- Automatic opening system
- One top and one side feeding barrel
- Continuous HTST (High Temperature-Short Time) cooking
- Precise adjustment of the shearing and mixing
- Pre-conditioning kit and specific co-extruded die and filling tank with one pump and crimper

Applications

- Encapsulation
- Pet food and fish feed
- Cereal products such as pasta, snacks, flat crispy bread, couscous and breakfast cereals
- Snacks and breakfast cereals with sweet and savoury filling
- High moisture meat analogues and fibrised proteins
- Multigrain chips
- Pre-cooked flours



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Microthermics UHT/HTST Lab-25EHVH Unit with Two Stage Homogeniser (GEA Niro Soavi NS2006) and Clean-Fill Hood

Capabilities

- Suitable for liquid and viscous fluids
- Small batches (3-5 litres min.). Up to 10-12 batches per day is feasible
- Hot Fill, HTST & UHT capable
- Low to high viscosities
- Low and high acid products

Applications

- Formulation and scale up
- Quality assurance of ingredient blends and flavours
- Fouling studies
- Characterization of the performance of new ingredients
- Kinetic studies: Bacterial death (TDT), Nutrient Destruction, Quality Loss



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Membrane Filtration Unit

Capabilities

- Automated lab plant for flat sheet membranes
- Feed pressures up to 64 bar (930 PSI)
- Flow measurement of permeate and concentrate
- Data logging and exchange via USB 2.0 port
- Suitable for ultrafiltration, nanofiltration and reverse osmosis membranes
- Suitable for laboratory work, membrane screening and quality control

Applications

- Separation
- Purification
- Concentration



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Limitech Multifunctional Pilot Mixer

Capabilities

- Jacketed steam heating
- Direct heating by steam injection
- Jacket cooling
- High shear mixing
- Dispersion
- Agitation
- Vacuum

Applications

Liquid and semi-liquid foods:

- Mayonnaises
- Sauces
- Dressings
- Cream Cheese
- Jams



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Meat Product Processing Suite

Dry Ager® Dry Aging Fridge DX1000®

Capabilities

- Maximum meat capacity of 100kg
- Electronic temperature controller (0°C to 25°C)
- Humicontrol® electronic humidity controller from 60% to 90%
- DX AIRREG® optimal airflow, activated carbon filter & sterilisation
- Himalayan salt block

Applications

- Dry aging beef
- Charcuterie
- Air drying cured hams



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Rex Technologie Vacuum filler RVF420

Capabilities

- Capacity variant of 100, 160, 250 and 350 litre
- Touch screen control panel
- Hydraulic lifting arm
- Rotary vane conveyor system

Applications

- Emulsions
- Larger pieces of meat or raw sausage applications



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Multi-tumbler system InjectStar®

Capabilities

- Small batch size (3x30kg in 55L drum)
- Variable rotation speed and direction (1.5-20 rpm)
- Adjustable vacuum and processing time
- Cooling jacket and internal cooling aggregate
- Concurrent tumbling of small batches

Applications

- Whole muscle products
- Fish
- Meat
- Poultry



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Piston Filler La Minerva Visn22

Capabilities

- Removable piston
- Adjustable speed
- Automatic start/stop with knee control
- Three funnel diameters 14, 22 and 30mm

Applications

- Meat emulsions
- Sausages
- Puddings
- Pasty fillings



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Meat Shredder KT SH1

Capabilities

- Capacity approx. 90kg/hr
- Motor speed: 1340rpm
- Continuous flow

Applications

- Shredded cooked meat products
- Pulled cooked meat products



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Vacuum tumbler 'Vario-Vac'

Capabilities

- Drum volume: 20L
- Max capacity including brine: 10kg
- Drum rotations per minute: 23rpm
- Rest time, cycles and total time adjustable

Applications

- Massaging cured products
- Dry salting
- Seasoning, marinating



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Combi Press CP-50-E

Capabilities

- Airless pneumatic stuffing into casings, nettings or bags
- Max 9 cycles per minute. 7-9 pieces/min of rolled roast in netting. 2-3 pieces of ham/min in casing or bag
- 300-1500 kg/h depending on product and calibre
- Mould length of 500mm

Applications

- Cooked meat products
- Dry-cured meat products



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Dorit Tenderizer M-88

Capabilities

- Independently controlled tenderiser head
- Knife head with 22 fix 4-knives 3x1mm offset in 4 rows
- Variable stitch rate
- Knife carrier speed: 32/64 strokes per min.
- Belt advance: 15-45 mm, mechanically adjustable in 6 steps. Passing width: 270mm. Passing height: 200mm.

Applications

- Any boneless products
- Fish & seafood
- Bacon & ham
- Beef
- Poultry



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Skin Packaging Machine – Italian Pack

Capabilities

- Temperature Controller with PID control system and PT100 probe
- Vacuum and gas management through sensor and time
- MAP values controlled via digital vacuum controller
- Max standard tray height 120mm (D13 and D15 tray size)

Applications

- Poultry
- Fish & seafood
- Bacon & ham
- Beef



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Inject-O-Mat 21 Needle Injector

Capabilities

- 21 continuously spraying, spring-loaded single needles (Ø4.0mm) in two rows
- Precision needle head with quick-change needle bridge system.
- Needle carrier speed: 10-60 strokes per minute
- Passing width: 280mm. Passing height: 210 mm.
- High injection rates with minimal brine pressure

Applications

- Fish & seafood
- Bacon & ham
- Beef
- Poultry



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Henkovic MAP Packaging Machine TPS-XL

Capabilities

- Tray sealing
- Vacuum packing
- Modified atmosphere packing
- Four trays per batch, D2 and D13 moulds

Applications

- Meat products and preparations
- Ready meals



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Memmert Constant Climate Chamber HPP260

Capabilities

- Precise humidity control 10%-90%RH
- Temperature control 0°C/10°C to +70°C
- Programmable temperature, humidity, fan speed, ramping times, illumination.
- 250L capacity

Applications

- Stability or shelf-life tests
- Fermented meat products



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Packaging Suite

Colimatic Thermoformer Thera 250

Capabilities

- Rigid and flexible packs
- Modified atmosphere or vacuum packs
- Perimetral sealing plates for any configuration of pack
- Dedicated cutting systems
- Photocell for printed film detection

Applications

- Ready meals
- Prepared consumer foods
- Meat and seafood



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MF Tecno Vertical Form Fill Machine MF 50

Capabilities

- Temperature control system for bag sealing
- Modified atmosphere packaging
- High production speeds
- Suitable for solids and liquids

Applications

- Solid granular and non-granular products
- Pet food
- Confectionery products
- Snacks
- Pulses
- Dried fruit
- Liquid products, dairy products, products in brine



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Rotopack Semi-automatic Fill Seal RPX5

Capabilities

- Semi-automatic sealing machine for preformed trays in PP, PE, PS, PET, AL
- Teflon coated sealing plate
- Profile cutting to the tray size with possibility to create an easy peel angle to facilitate the tray opening
- Digital temperature controller with PT 100 probe
- Adjustable sealing time

Applications

- Thick dairy products such as yogurts
- Sauces, creams, cheese spreads
- Desserts (puddings, mousse)



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Easy Flow Horizontal Flowrapper 400 Eco



Capabilities

- Fully electronic
- Packing speeds up to 80 packages per minute

Applications

- Bakery products
- Fruits and vegetables
- Cereal and protein bars

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Colimatic Automatic Tray Sealer TDF 1000E

Capabilities

- Sealing
- Partial vacuum
- Modified atmosphere
- Skin packaging

Applications

- Ready meals
- Prepared consumer foods
- Meat and seafood



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Rotopack Semi-automatic Tray Sealer Rapida Plus with Gas



Capabilities

- Sealing
- Vacuum packing
- Modified atmosphere packing

Applications

- Liquids products
- Semi thick and thick products
- Viscous product
- Suitable for dairy product

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Lanico Can Seamer Machine V110 P

Capabilities

- Can seaming
- Up to 850 cans/h

Applications

- Fruits
- Vegetables
- Beans
- Soups
- Meats and seafood
- Desserts



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Advanced Technology Suite

Pulsed Electric Field

Capabilities

- Meat tenderisation
- Nutrient retention
- Improved shelf-life
- Nutritional and bioactivity retention
- Improved process efficiency
- Improved brine and marination processes
- Low temperature preservation
- Reduced water and energy consumptions

Applications

- Liquid (juices, milk, smoothies)
- Solid food (Meat, seafood, poultry, fruit and vegetables)
- Food pasteurisation



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Cavitation Technologies

Capabilities

- Inactivation of bacteria on food matrices
- Meat tenderisation
- Emulsification, homogenisation, hydration, extraction and accelerated curing and brining
- Drying and defoaming
- Enhanced cell disruption and mass transfer through cavitation

Applications

- Solid food (meat, seafood, poultry, fruit, vegetables, grains)
- Liquid (fruit juices, milk)
- Milk powders



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UV Light System

Capabilities

- Disinfection of produce surfaces, packaging, and other food contact surfaces
- Ensures food safety
- Improved shelf-life
- Produces no chemical residuals
- Versatile technology
- Environmentally friendly

Applications

- Solid food
- Meat
- Seafood
- Poultry
- Fruit
- Vegetables



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Microwave Extraction

Capabilities

- Mixed microwave and ultrasound (SINAPTEC Technology)
- Significant shortening of processing time
- Reduction in the use of solvents
- Suitable for clean and green solvents
- Enhanced extraction yield and productivity
- Rapid internal heating by microwave energy
- improved process efficiency

Applications

- Extraction of various bioactives from food materials
- Value addition to food processing by-products
- Module for recycling plant extract residues into fuel pellets
- Extraction of proteins and other biomolecules



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Cold Plasma

Capabilities

- Inactivation of bacteria on food matrices
- Reduction in use of chemicals for food preservation
- Improved shelf-life
- Rapid and cost effective
- Clean technology that can replace chemical sanitizers
- Energy efficient

Applications

- Solid food (meat, seafood, fruit, vegetables, dry food)
- Liquid (juices, milk, smoothies)



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Microplate Reader

Capabilities

- UV-Vis measurements in 6 to 384 well microplates and cuvettes
- Allows endpoint, kinetic, spectral scanning and well area scanning modes, plus incubation and shaking

Applications

- Biomarker assays
- Cell-based assays
- Cellular and microbial growth
- Elisa and related immunoassays
- Nucleic acid quantification



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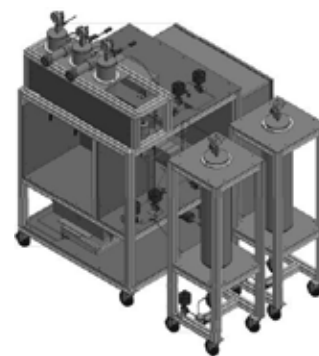
Supercritical Fluid Extraction

Capabilities

- Reduction in use of chemicals for food preservation
- Efficient way to extract valuable constituents
- Extraction and purification all in one step
- Use of non-oxidant medium
- Reduces use of energy, water and chemical solvents
- Clean technology that can replace chemical sanitizers
- Carbon dioxide (CO₂) is the fluid most often used

Applications

- Extraction of bioactive compounds and essential oils from herbs
- Functional ingredients from micro and macro algae
- Removal of lipids from food
- Application in food safety: fraud, adulterations and residual contamination



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Fluidized Bed Dryer

Capabilities

- High rates of moisture removal
- High thermal efficiency
- Reduced contact time for drying
- Reduction in the moisture content of powder and granules

Applications

- Ideal for removal of surface and bound moisture in powder, crystalline or granular materials
- Granulation of food materials



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Cell Alive System (CAS System)

Capabilities

- Reduction in use of additives and antioxidants for food preservation
- Efficient way to freeze
- Limits ice crystal formation that destroys food texture
- Cell membranes and walls stay intact; maintains the same integrity after freezing and defrosting.
- Keeps a level of freshness and taste that traditional food preservation technologies cannot achieve.
- Uses electromagnetic fields and mechanical vibrations

Applications

- Liquid (juices, milk, smoothies)
- Solid food (meat, seafood, poultry)



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Nutritional and Compositional Suite

Mineral Analysis System

Capabilities

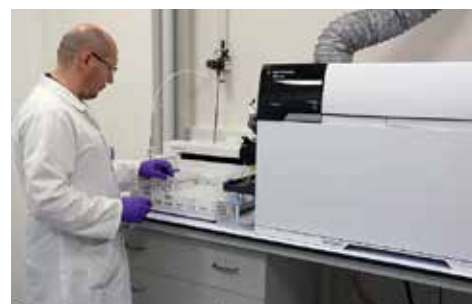
Inductively coupled plasma mass spectrometer:

- Allows accurate analysis of trace and major elemental minerals in a range of foods.
- Modern robust system with broad linearity, allowing a broad range of minerals to be analysed without dilution.
- System also suitable for single nano-particle analysis

Applications

Cost effective solution for elemental analysis:

- Key nutrients: Calcium, iron, potassium, magnesium, zinc and selenium
- Analysis of Sodium
- Food safety including heavy metals such as lead, cadmium and mercury



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Carbohydrate Analysis System

Capabilities

- Ion chromatography system that is capable of measuring mono-, di-, oligo-, and polysaccharides in a single analysis
- Highly specific electrochemical detector, which allows unrivalled sensitive analysis of sugar free products
- Allows measurement of carbohydrates across a wide range of concentrations

Applications

Comprehensive measurement of sugars in prepared consumer food products:

- Analysis and profiling sugars in food and beverages
- Authenticity of food and beverages



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Vitamin Analytical Platform

Capabilities

- Rapid analysis of vitamins in food samples
- High capacity sampling system
- Unique ionisation system to provide improved sensitivity for fat soluble vitamins
- Allows quantitation of vitamins across a broad range of concentrations

Applications

Comprehensive measurement of vitamins in prepared consumer foods:

- Fat soluble vitamins: A, D, E and K
- Waters soluble B and C vitamins



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Sensory Analysis Suite

Biometric Technologies for Sensory Science

Capabilities

- Facial expression software for measuring changes in facial expressions while eating
- Eye-tracking glasses for recording consumer's eye movements / natural gaze behaviour
- Galvanic Skin Response (GSR) for measuring changes in the electrical characteristics of the skin
- Electroencephalography (EEG) helmet for recording the electrical activity of the brain

Applications

- These technologies will be used to overcome the biases of traditional sensory techniques to better understand consumer's true reactions towards food products
- Applicable to all food and beverage products



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Shelf-Life Suite

Microbial Shelf Life Suite

Capabilities

This bio-containment suite contains a range of:

- Processing equipment (mincers /grinders/ mixers, smokers)
- Packaging equipment (vacuum pack/vacuum skin pack / modified atmosphere)
- Storage cabinets (temperature and humidity controlled)
- Cookers (microwave, sous vide)
- Retail display cabinets

Applications

This suite will facilitate:

- Shelf life and pathogen challenge tests on a wide range of PCF products
- Development and validation of new innovative approaches to control micro-organisms in PCF products and to assure food safety
- The ability to validate safety and shelf life of prepared consumer food using real food chain conditions will facilitate a key step in the commercialisation process for new products and processes.



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Product Functionality Assessment Suite

Product Functionality Assessment Suite

Capabilities

- Particle Size Analyser
- Physical shelf-life Stability Dispersion Analyser
- Oxidation Stability Tester
- Rheometer
- Density meter
- Refractometer

Applications

- Fast, reliable particle size measurement of fragile and cohesive dry powders as well as wet dispersions.
- Analysis of particle and droplet velocity distributions for creaming and sedimentation phenomena.
- Determination of the oxidation stability of food oils and fat by AOCS International Standard Procedure Cd 12c-16.
- Measurement of dynamic viscosity of low-viscosity up to semi-solid samples.
- Quick and reliable refractive index, density and consistency measurements.



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How Companies Can Engage

The primary objective of the PCFC is to support science-based innovation within the Prepared Consumer Food sector. This will ensure PCF companies remain at the forefront in terms of competitiveness and meeting consumer demands, on both national and global markets.

The Centre will ensure proactive engagement and effective exploitation of emerging opportunities. It will provide the infrastructural capabilities, equipment and collaborative expertise to accelerate the development of new products and processes within the PCF sector.

We encourage the industry to engage directly with our staff, using the contact details provided, and to access the facilities and know-how available within the PCFC. We look forward to exploring collaborative opportunities and industry-led projects through a range of Enterprise Ireland funding mechanisms.

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An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
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