

Emerging Dehydration Technologies and Processes

DESCRIPTION

An American Fortune 500 company is seeking to identify emerging dehydration technologies in food and adjacent industries. Ideal technologies will have established feasibility within the past five years.

BACKGROUND

Dehydration is critical to the company's snack portfolio. The dehydration method has a large impact on the final taste, texture, and appearance of the finished snack. The company is interested in new methods to dehydrate food that produce novel and differentiated finished products. The alternative dehydration method could be leveraged from a non-food industry source.

The company currently dehydrates (sometimes concurrent with cooking) large amounts of foods and snacks and is very well versed in the state-of-the-art. Common dehydration technologies include frying, baking, extrusion and oven drying. Frying is the benchmark in speed, quality of finished product and energy input. Spray drying, freeze drying, vacuum drying and drying with radiant and electromagnetic sources such as IR, MW or RF are also well known to the company.

The company has conducted extensive research into dehydration technology. The list below details all the technologies that have been explored so far.

- Frying
 - Convection ovens with forced air and other gases.
 - This class of technologies includes a wide range of both conveyORIZED and rotary style dryers, high velocity impingement dryers, etc.
 - Spray drying
 - Pneumatic drying
 - Fluidized bed
 - Freeze dryer
 - Vacuum drying
 - Zeodration
 - Refractance window
 - Drum dryer (conduction dominant)
 - Infrared
 - Electromagnetic (MW, RF, etc.)
- 

- Supercritical Fluid drying
- Ultrasonic and acoustic enhanced or assisted dehydration
- Osmotic dehydration
- Centrifugal drying
- Belt press

KEY SUCCESS CRITERIA

Successful technologies will:

- Produce products similar to current snack products (fried or baked potato chips, tortilla chips, pretzels, etc.), but dehydrate them faster and/or more efficiently than current technologies

OR

- Create differentiated tastes and textures that are not currently in market or available from existing dehydration technologies
- Preferentially remove water over other constituents in food
- Dehydrate fruits and vegetables without severe thermal degradation (similar to freeze drying)
- Accommodate a broad range of surface area to volume ratios
 - Examples: Flat slices, 3D extruded shapes / collets, etc.
- Level of development:
 - Early stage is acceptable
 - Proof of principle preferred

POSSIBLE APPROACHES

Possible approaches might include, but are not limited to:

- Dehydration technologies adapted from non-food industry sources are of significant interest.
- Pretreatment technologies that enhance post-treatment dehydration.
- Combinations of drying technologies that improve efficiency or create differentiated products
 - Combinations that provide a higher heat flux than frying or result in a texture and microstructure that are different from current market offerings should be emphasized.

APPROACHES NOT OF INTEREST

Individual technologies that utilize only one form of drying technology from the list provided in the “Background” section above should be avoided unless the inventor can offer a step-change in the existing technology to dramatically change its cost or performance.



PREFERRED COLLABORATION TYPES:

- Joint Development
- Contract Research
- Technology Acquisition
- Technology Licensing
- Supply Agreement
- To Be Negotiated

If you are interested, please respond to:

Ms Katarína Nagyová
Technology Transfer Manager,
Head of TT Department
LC Innoconsult International

innovacio@lcinnconsult.com
nagyova.katarina@lcinnconsult.com

