

Fat Reduction in Food: Enhanced Food Oil Spreadability using Non-Thermal Plasma

Product Offering

Researchers from Dublin Institute of Technology have developed a novel technology for enhancing oil spreadability on food products.

The process involves passing dry, snack foods through a plasma curtain before spreading food-grade oil (e.g. vegetable, sunflower, animal fat oil) over the product surface.

This method can reduce the fat content of food by 50 to 75% while maintaining the palatability and aesthetic appearance of the product.



Competitive Advantages

- **Healthier Food:** Using this process, up to 50% more spreadability of oil can be achieved, compared to existing methods, resulting in healthier, lower fat food products.
- **Cost Savings:** The low energy requirements of this process compared to current methods and reduced oil usage means this technology can yield significant cost reductions in food production.
- **Production Integration:** The technology can be easily integrated into a continuous food production or finishing line.
- **Simple Process:** Ambient atmospheric air can be used to generate plasma and unlike other processes, heating of oil is not required.
- **Preserved Flavour:** Oxidation is reduced as heating of the oil is not required, ensuring that the food maintains its flavour.
- **Wide Applicability:** This process can be applied to any food production process that requires oil spraying.

Industrial Applications

This technology will be of interest to commercial food companies that require the application of food-grade oil during the production process. In particular, cereal based bakers such as biscuit, cracker and snack food producers would benefit from this innovative process due to their reliance on spreadable food oil.

Commercial Opportunity

DIT Hothouse is seeking a suitable commercial partner to take this innovative new technology to market. This technology has significant commercial potential as it is superior to existing industrial snack food processing techniques in terms of reduced input costs, higher output along with improved taste, texture and appearance. Most importantly, it yields a healthier end product in terms of lower fat content.

DIT Hothouse offers excellent commercial terms to licensees on technologies developed through DIT research.

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Stage of Development

A laboratory prototype has been developed and concept proven. The technology is patent-pending.

Technology Description

The technological process developed is based on barrier discharge atmospheric pressure non-equilibrium plasma.

The process employs a dielectric barrier discharge which enables food surface modification suitable for continuous online processing.

The discharge generates nonthermal plasma in the air, which changes the food surface without modifying its organic properties.

Project Team and Collaborators

The technology was developed through research undertaken by DIT's School of Food Science and Environmental Health. The project team consists of:

- **Dr. PJ Cullen (Primary Investigator)**
- **N.N. Misra**
- **Dr. Carl Sullivan**

Intellectual Property

The Intellectual Property associated with this technology is based on nonthermal/non-equilibrium plasma for modification of food products. The technology is patent-pending.

Next Steps

If you would like to learn more about this technology or discuss commercial opportunities, please contact:

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DIT Hothouse is the award winning Innovation and Technology Transfer Centre based in Dublin Institute of Technology. Hothouse leads the consortium responsible for commercialising research from DIT, IT Tallaght, IT Blanchardstown, IADT and National College of Ireland.

Hothouse draws in entrepreneurial and academic talent, ignites creativity and provides a dynamic environment to fast-track businesses and technologies to commercial success.