



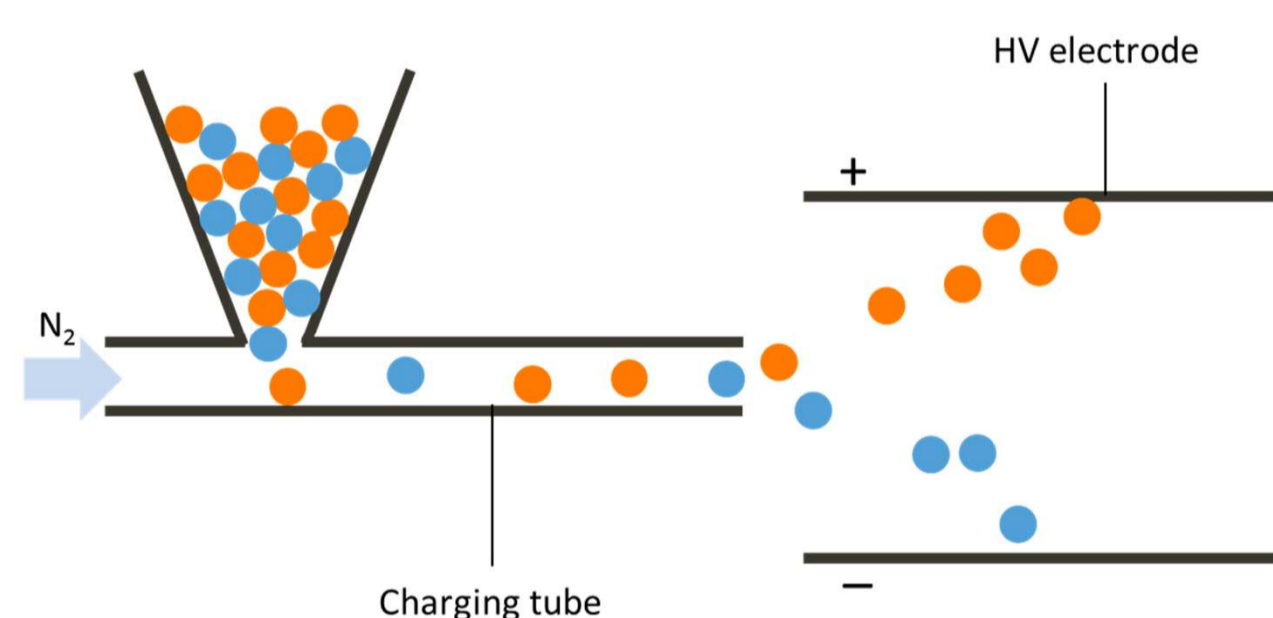
Sustainable processes for solid and concentrated particulate foods

Maarten Schutyser, Kashif Khan, Kevin van Koerten, Yvette Lubbersen, Pascale Pelgrom, Jimmy Perdana and Jue Wang
Part of Food Process Engineering

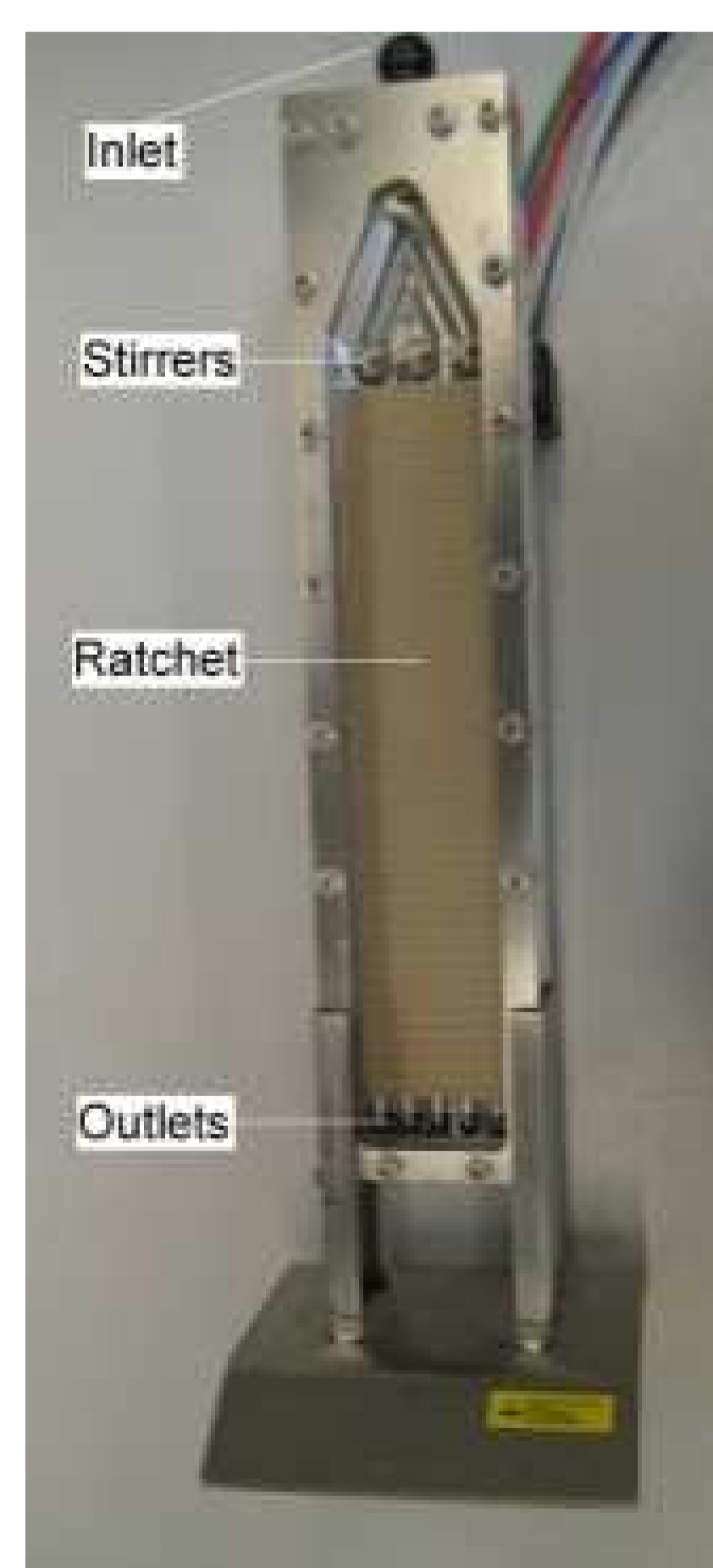
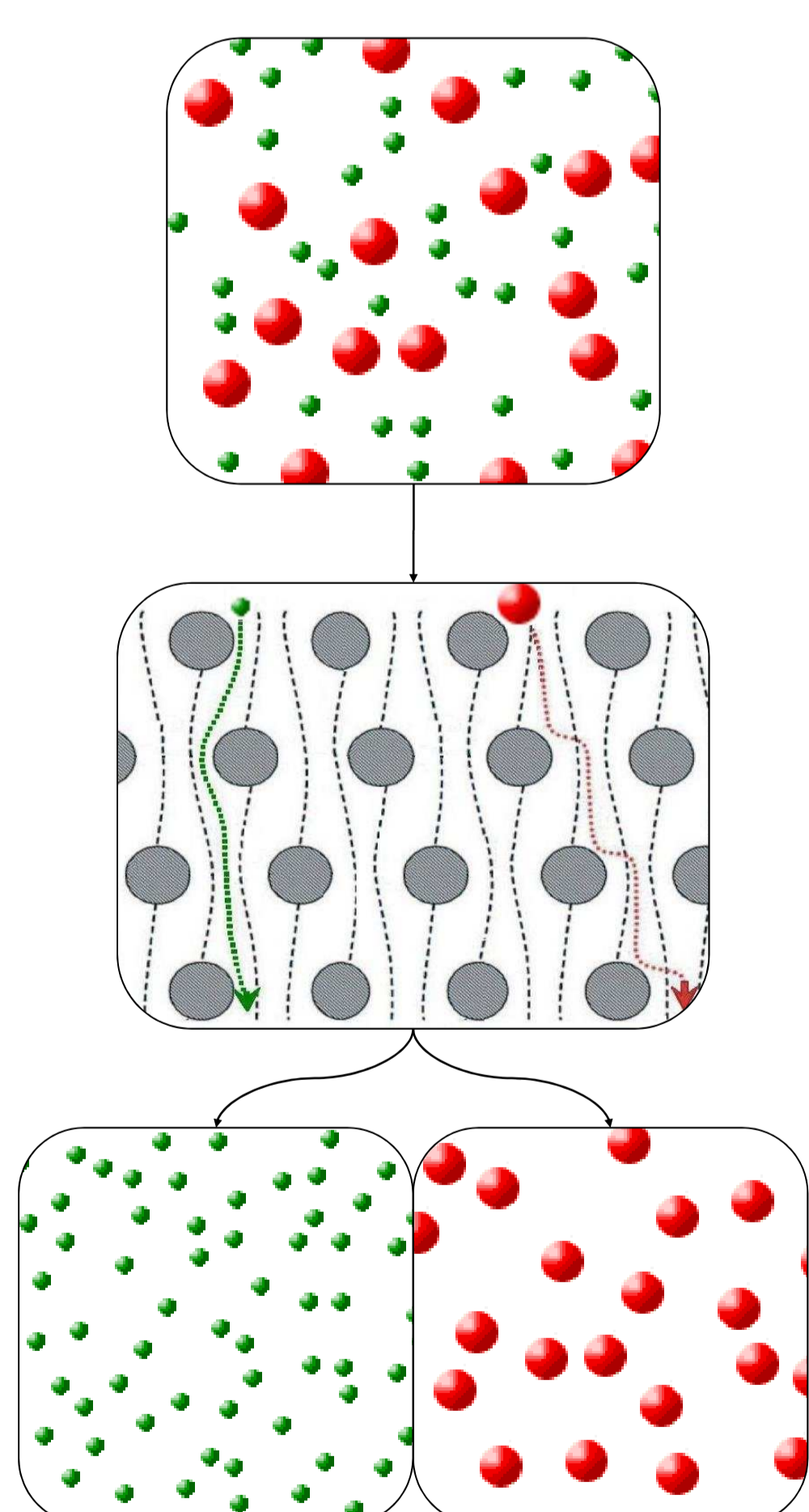
Dry fractionation



With a large pilot-scale facility we explore optimum milling and air classification conditions for production of pea or lupine protein concentrates¹. Their functionality is evaluated for the preparation of sustainable foods, such as meat analogues. Additionally, we are exploring a novel separation technique using electrostatic separation. This technique we evaluate for fractionation of wheat or rice bran, which contain health beneficial components.

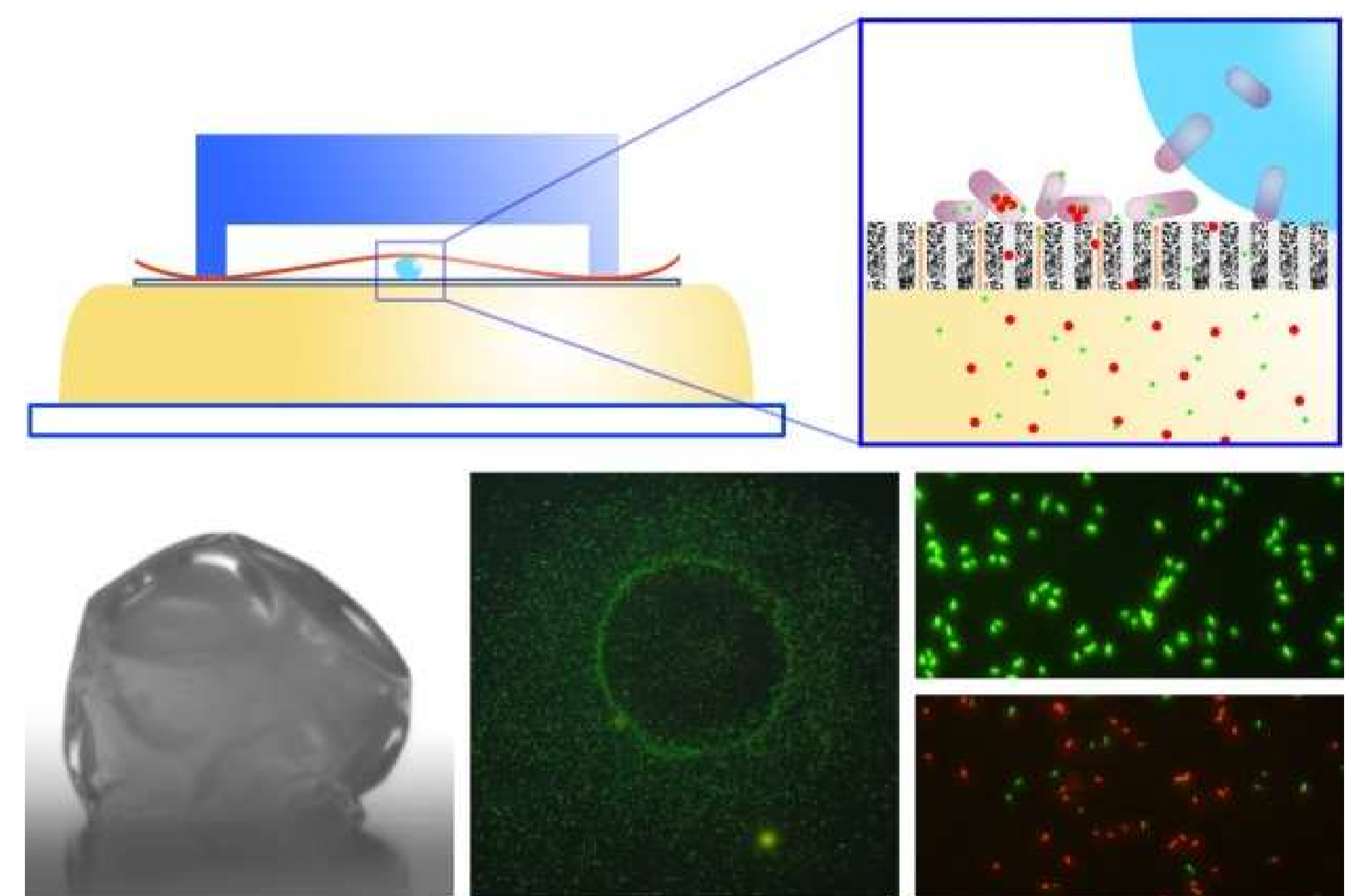


Suspension fractionation



Deterministic ratchets are a novelty for suspension fractionation, e.g. recovery of algae or beer filtration². Obstacles positioned in a flow channel separate particles from the fluid stream and sort on the basis of size. Using high speed camera techniques and laboratory experiments we explore this promising separation technique for future applications.

Spray drying



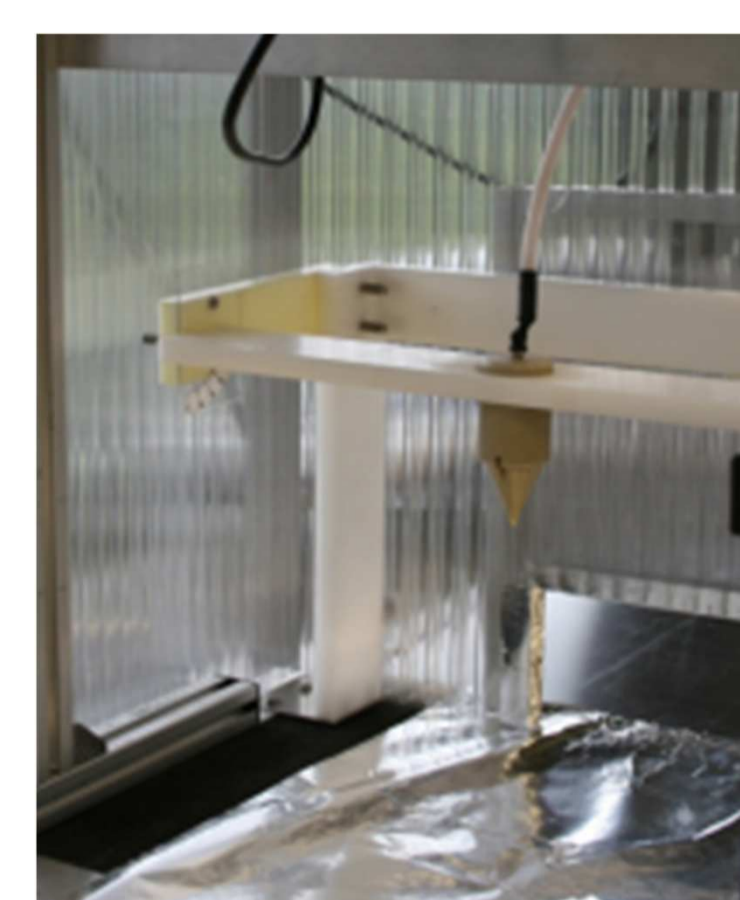
Spray drying is investigated as an energy efficient alternative to freeze drying. We apply a single droplet method to find optimum drying conditions with maximum survival of probiotic bacteria³. Survival we evaluate by fluorescence microscopy (green is live and red is dead).

Frying of French fries



In collaboration with Aviko BV the ambition is to optimise the industrial production process of French fries from raw materials until end-product and minimise all inefficiencies. Our focus is on how process conditions during frying affect the product quality distribution. We study this using an experimental fryer set-up with transparent walls.

Electrospray coating



Electrospraying is a novel and more efficient technique for spray coating of edible oils⁴. We apply it to coat ultrathin fat layers to make capsules or tablets. Subsequently, we evaluate the water absorption capacity of these tablets.