From digital image to food product: 3D food printing makes feasible the creation of nutritional and sensory personalized food products with unprecedented benefits.

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Additive manufacturing, popularly known as 3D Printing, makes realizable the creation of tangible objects from a digital image. This opens for unprecedented ambitions such as on-demand manufacturing, customization of gods, reshaping manufacturing chain, to namely only few. In food sector, the use of 3D Printing is an emerging technology with the first scientific documents in 2007. 3D Food Printing has unparalleled level of innovation capable of reshaping the way in which food are produced, stored and consumed. Among others, the production of customized food products, on-demand production, food-waste reduction, and consumer's co-creation. For instance, the co-creation of nutritionally and sensory customized food products has direct benefits on consumer's health, might alleviate swallowing and mastication problems of vulnerable peoples, may contribute in sustaining health status of hospitalized patients as well as maximize sensory acceptance reducing waste. Examples of 3D food printers have been showed for many different food materials such as cereal-based products, cheeses, fruit and vegetables, food gels, meat-analogues, with interesting and promising results. Also, more recently examples of 4D food printing focusing on the change of color, aroma and shape of a printed food during time have been also investigated. Finally, the first commercial applications of 3D Food Printing are available such as 3D printed pasta or nutritionally personalized candies.

However, although the scientific information is increasing with exponential trend, the practical usage of 3DFP at industrial level for a mass production or at home is still limited because it suffers of a slow food printing, the design and development of printable food formula, the needs of improve the commercial printers making their functions adaptable to the wide range rheological and physical properties of foods materials.

With the aim to facilitate the process of improving 3D food printing application, this oral communication wants to present, sharing, interpreting and discussing the recent scientific experiments performed in our laboratory by using different food materials and aiming to create personalized food products.