

Development of an Intelligent Indicator for Inkjet Technology

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Visual aspects, off-odours or use-by-dates often lead the consumer to discard food, without any indication of its real quality. Nowadays, intelligent packaging can communicate the condition of packaged food which has been subjected to different environments.¹

In order to reduce food and packaging waste, the **IsaPack** project aims at achieving extended shelf-life and quality of food packaging, by developing a sustainable active packaging and accurate, reliable indicator systems, capable of indicating microbial growth, food safety and a variation in the time-temperature history. The indicator systems must be suitable for incorporation into ink formulations, which can be directly printed by inkjet onto packaging materials. Furthermore, the ink must match the shelf-life of the food product contained in the packaging.²

Time-temperature indicating (TTI) inks containing a photochromic dye and matching beef-steak shelf-life have been developed. The concentrations and choice of solvents, polymers and additives are crucial parameters to tune the TTI shelf-life. Care must be taken to prevent exposure to ambient light to avoid recharging of the TTI. Trial formulations have been printed with Inkjet technologies and have shown promising results, but optimization remains a challenge to obtain the desired end-user properties expected of an inkjet ink, while matching the shelf-life after printing.

References:

1. K.L. Yam, Journal of Food Science, **2005**, 70, 1.
2. <http://www.isapack.eu/>

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