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Application of nanotechnology in analysis of food

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Nanotechnology is an emerging field. Nano science refers to the science & discipline and nano technology refers the applied part of it including the engineering to control, manipulate structure the matter and testing of matter at an unimaginably small scale: nano scale. Nanotechnology involves the study and use of materials at nanoscale dimensions (nanomaterial sizes of ≤100 nm), exploiting the different physiochemical properties exhibited by these nanomaterials from the same materials at a larger scale. Nanotechnology has been applied in almost every field and food processing, quality control & quality assurance are no exception to this. Food industry is in need of reliable sensor with fast response time providing precise information to avoid loss of foods. Current sensor technologies are able to measure all required variables; however, they may lack sensitivity, rapidity of detection, portability or a combination of these factors. This need to generate fast, reliable and precise information on the quality and security of foodstuffs has resulted into an intensive search for more selective and sensitive analytical methods. Nanotechnology is one way to achieve these goals. Nano-enabled sensor developments may allow for portable or in-situ continuous monitoring, leading to farmer led intervention for improved outcomes including increased and better quality and yields of food. For food quality control, nanotechnology applications again offer greater sensitivity and real-time (on the spot) detection, with smaller samples being required. This would lead to more effective detection of contaminants that lead to food borne. Various nanoparticles based on gold, silver, magnetic, and semiconductor materials (quantum dots), used their capabilities of optical (absorbance, luminescence, surface enhanced Raman spectroscopy, surface plasmon resonance), electrochemical, and mass-sensitive ofr analysis of foods. Because nanomaterials also have good biocompatibility, they are used to immobilize biomolecules for the fabrication of biosensors. Nanotechnologies offer the potential for increasingly sensitive sensors with reduced time to results, which can be used on-the-spot, and do not require high levels of technical expertise.

Biography

Santosh Chopde has completed M.Tech (Dairy Engineering) from NDRI, Karnal (INDIA) and presently he is working as an assistant professor at College of Dairy Technology, Udgir.

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Chromatospectrometric determination of UO_2^{2+} with preliminary separation from Hg^{2+} and VO^{2+} on cellulose and aminoplast mixture using various surfactants as mobile phase

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Thin layer chromatography in combination with spectrometry used for the separation and detection of UO_2^{2+} after its separation from Hg^{2+} and VO^{2+} in aq. sample. System consisting of mixture containing aminoplast and cellulose in 8:2 (wt/wt) as stationary phase and BAC, SDS, Tween -80 and cocoamidopropyl Betaine surfactant as a mobile phase with various concentration was used to separate. Effect of addition of protic and aprotic additive in mobile phase system also studied. Detection of UO_2^{2+} after TLC separation provides recovery of 90%.

Biography

Sarang Sahebrao Dhote has completed his M.Sc. at the age of 22 years from Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur Maharshtra. Currently doing Ph.D. from Hislop college Nagpur.

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