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A new extraction procedure for Bisphenol A (BPA) in canned foods

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A new extraction procedure for the mutagenic BPA in canned food was developed employing an aqueous basic solution of 0.25 M K2CO3 and 0.10 M NaOH after spiking with BPA-d16 as internal standard. The BPA was next extracted into diethyl ether after acidification to pH=4 and centrifugation. Acetylation at dry basic conditions after diethyl ether evaporation was carried out for 30 minutes at 110 0C. Detection of the acetylated BPA was carried out by GC-EI/MS in the SIM mode with pulsed split-less mode. The method was applicable in terms of eliminating the use of solvents like acetonitrile and heptane for the extraction step, where long evaporation times that extend to several hours may have been needed to evaporate acetonitrile. Also removing lipids and precipitating most of the proteins at acidic conditions prior to diethyl ether extraction replacing heptane or hexane use. In addition acetylation is conducted in the absence of water without a freeze-drying step. The method was linear over the range 1µg/L to 460 µg/L with instrument detection limit (IDL) of 0.01 µg/L and a limit of quantitation (LOQ) of 0.034 µg/L. The method detection limit (MDL) ranged from 0.3µg/Kg to 2.0 µg/Kg (wet weight) based on 10 g sample and recovery range from 85% to 94%. BPA concentrations in tested canned foods from outlet stores ranged from < MDL to 57.5 µg/Kg which were below the specific limit of BPA migration in food proposed by the EU and within the food safety and quality criteria.

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Carrier Dynamics in Organolead Halide Perovskites

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Encyclopedia of Bioanalytical Methods for Bioavailability and Bioequivalence Studies of P Two-dimensional (2D) layered perovskites ((A)2(CH3NH3)n−1MnX3n+1, where A is a large aliphatic or aromatic alkylammonium cation working as an insulating layer, M is the metal cation, and X is the halide anion) have already emerged as an attractive material for applications in photovoltaics and other optoelectronic devices. Recent reports have demonstrated that the 2D layered perovskite films actually comprised multiple perovskite phases (with various n values from 1, 2, 3 and 4 to near), even though the films were intended to be prepared as a single-phase. This hybrid feature seems to be ineluctable in fabricating 2D films. However, two important questions remain yet-to-be-answered: first, how the different perovskite phases align in the hybrid films; second, whether the band alignment between different phases induces energy funneling or instead charge separation. The latter is especially important because it dictates the application of these hybrid 2D perovskite films: energy funneling is useful for lightemitting applications, whereas charge separation would be more beneficial for light conversion or detection. Herein, we studied the charge carrier dynamics in 2D multi-layered perovskite films using ultrafast transient absorption and photoluminescence spectroscopy. Researchers found that multiple perovskite phases inside 2D layered perovskite film (including $n = 2, 3, 4$ and $\approx \infty$) naturally align in the order of n along the direction perpendicular to the substrate. Driven by the band alignment between 2D perovskites phases, researchers observed consecutive photoinduced electron transfer from small-n to large-n phases and hole transfer in the opposite direction on hundreds of picoseconds inside the 2D film of ~358 nm thickness. This internal charge transfer efficiently separates electrons and holes to the upper and bottom surfaces of the films, which is a unique property beneficial for applications in photovoltaics and other optoelectronics devices.

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