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Metallic out-diffusion quantification in polymers by x-ray fluorescence MIGUEL BENCOMO, MIGUEL CASTRO-COLIN, Department of Physics, U. of Texas at El Paso, 500 W. Univ. Ave, El Paso, TX 79968 — X-ray fluorescence is a technique that has sensitivity within parts-per-million elemental content level, which is sufficient to probe trace materials. In this study two X-ray sources were used, copper and silver radiation, to detect metallic additives used to modify the properties of polymers. The technique requires minimal to no sample preparation and is non-destructive. In the present case trace materials of heavy metals are identified in two types of polymers, polypropylene and polycarbonate, before and after being exposed to energy intake sufficient to detach the metals directly or to promote the formation of hydroperoxide; this last one indirectly produces detachment through re-arrangement of the polymeric matrix. Quantification of heavy metal detachment and out-diffusion is relevant due to possible adverse effects that may arise when such elements make contact with consumables.

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