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Electron density of rhizophora spp. Wood using Compton scattering technique at 15.77, 17.48 and 22.16 Kev xrf energies

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Compton (incoherently) scattered photons which are directly proportional to the electron density of the scatterer, have been employed in characterizing Rhizophora spp. as breast tissue equivalent. X-ray fluorescent scattered incoherently from Rhizophora spp. sample was measured using Si-PIN detector and three XRF energy values 15.77, 17.48 and 22.16 keV. This study is aimed at providing electron density information in support of the introduction of new tissue substitute materials for mammography phantoms.

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The opportunities for direct digital manufacturing in medicin

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Direct Digital Manufacturing is a set of technologies which are set to revoluntinze manufacturing. Direct Digital Manufacturing is able to directly produce an object from a digital definition without the use of moulds or other specific tooling. As such it is particularly suited to objects or process which require mass customisation. This is clearly has huge potential in the field of medicine and healthcare for which personalisation is a critical requirement for many devices. Direct Digital Manufacturing involve additive manufacturing procedures which include 3d printing, stereolithography and selective laser melting. We review these technologies with regard to their potential for medical applications and we consider the changing landscape of direct digital manufacturing as it develops the capacity for functionally graded materials, functional materials and the move from design by form to design by function. We illustrate the possibilities using current projects from the broad based portfolio of work on direct digital manufacturing currently underway at CDRSP. A major use of direct digital manufacturing is the generation of scaffolds for tissue engineering. However, the scope for medical applications of direct digital manufacturing is much wider than that and we speculate on the future trends.

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