Special Issue

Advances in Emerging Radiation Shielding Materials: Synthesis, Properties and Applications

Message from the Guest Editor

Radiation shielding materials generally have a high atomic number (Z) because the mass attenuation coefficients generally increase as the Z of the absorber increases. The photoelectric interactions are increased in high-Z materials and these yield more pair production interactions for high-energy photons. Because of the high-Z effect, lead has been commonly used as a shielding material in medical radiology departments. However, lead is extremely toxic. In view of this, polymer-matrix composites have been designed to be lead□free, while being lightweight, conformable, cost effective, and potentially capable of significantly attenuating X□rays. Other matrices such as concrete, cementitious materials or tungsten have been developed as lead□free radiation□protection materials in the walls and roofs of hospital rooms, nuclear power stations, and accelerators which house X-ray, □-ray, or neutron particle production instruments. The design of a shielding material is heavily dependent on factors such as radiation type, the activity of the source, and the dose rate in addition to its ease of fabrication, cost, and weight.

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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