

3D Printing of Radiation Detection Materials

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Plastic scintillators are one of the most widely used detection materials in nuclear and particle physics experiments. Their reliability, simplicity, and low-cost, make them the material of choice for many applications. Recent advances in photocurable plastics scintillators have opened the door for 3D printing of these materials into simple to highly complex geometries. Their formulations made them an attractive base material for addition of a wide range of dopants such as boron and lithium, enhancing their detection capability. They also provide a near contactless manufacturing technique which is desirable for rare-event experiments such as neutrinoless double beta decay. In this talk, I will present on the development of photocurable scintillating resins for 3D printing of plastic scintillators. Resin methodology, how 3D printing is done, characterization of photocured scintillators, and their potential applications to experimental nuclear physics will be discussed.