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CONCLUSION
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The concept of macroscopic removal cross section is best suited for shielding calculations. From the experiment it can be concluded that, the macroscopic removal cross section for Am-Be(α, n) neutrons is maximum for iron followed by lead, polypropylene, and polyacrylic acid and minimum for concrete. The weight in gm/cm² required to reduce the flux of neutrons to half of its initial value is minimum for polypropylene because of its light weight. The polypropylene is about 30% more effective than ordinary concrete for fast neutron attenuation. From the experiment it is found that the macroscopic removal cross section is independent of density of shield material and light weight materials like polypropylene and polyacrylic acid effectively reduce the flux of fast neutrons. The foil activation method is found to be useful method for making shielding calculations. For making shielding calculations position of irradiated foil must be selected carefully. The simplest shield possible is accomplished by interposing a sufficient thickness of shield material directly between neutron source and the detector. This method is much less bulky and therefore simpler and cheaper and hence preferable when sufficient. Form the experiment it can be concluded that polymers effectively reduce the fast neutron flux. Therefore, the study of neutron
attenuation characteristics of polymers is considered to be very useful. Considering the light weight and also the low cost, polymers in general and particularly in composition with heavy shields like iron and lead turnout to be an ideal shield material for neutron attenuation. The weight of the shielding for fast neutron attenuation can be satisfactorily reduced by using polymers or composition of polymers with heavy shield like iron and lead.

We may also conclude that a simple device capable of generating distinct gamma energies in the region of 2 to 7.64 MeV can be developed with moderate intensity Am-Be (α, n) neutron source. This device can be conveniently used for calibration of gamma detectors like NE 213 liquid scintillation detectors, NaI(Tl) detectors and Ge detectors.