

Low Radioactivity Techniques (LRT2024)



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Cosmogenic activation in materials used in low background experiments

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In experiments devoted to investigate rare events, demanding ultra-low background conditions, radioisotopes produced by the exposure of materials to cosmic rays mainly on the Earth's surface can become problematic to achieve the required sensitivity. The origin of this cosmogenic activation will be presented and the ways to quantify the activation yields following different approaches will be discussed, considering both measurements (either with beams or under controlled exposure to cosmic rays) and calculations. Precise quantification is important to assess the real danger of this background source and to take accordingly the necessary actions for production, transport and storage of materials. Examples of cosmogenic activation studies relevant for underground experiments will be shown, considering detector target materials (like Ar, Ge, NaI or Xe) or other ones commonly used (like Cu, Pb or stainless steel).

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