

Barium capture and identification through bi-color molecular sensors

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The next generation of neutrinoless double beta decay searches aims to reach sensitivities in the half-life of the process up to 10^{28} years. This will require tonne scale detectors with essentially no background in their region of interest. One of the most promising solutions, which may be implemented by gas or liquid xenon TPCs, is the possibility of tagging the daughter ion produced in the decay. The NEXT collaboration is currently involved in a intense R&D program based on molecular indicators able to capture the Ba^{++} cation, changing their response when chelated. In this talk I will present one of the NEXT R&D lines, called BOLD, which proposes the use of fluorescent bicolor indicators (FBI). I will show the latest results based on the spectral shift of the emission fluorescence of this molecule after Ba^{++} capture in dry media. The emission light is then detected by laser microscopy. I will also detail how this technique can be integrated into a xenon gas detector.

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No, this is an entirely new submission.

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