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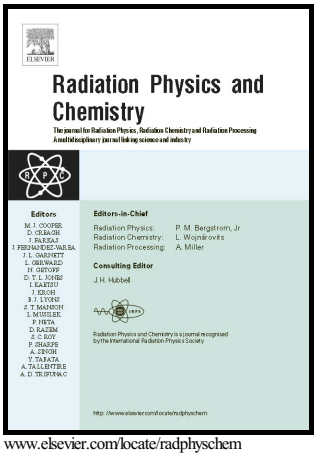


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# Electron beam for preservation of biodeteriorated cultural heritage paper-based objects

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## Abstract

Unsuitable storage conditions or accidents such as floods can present a serious threat for large quantities of book making them prone to attack by harmful microorganisms. The microbiological degradation of archives and book collections can be efficiently inhibited with irradiation processing. Application of EB irradiation to book and archive collections can also be a very effective alternative to the commonly used ethylene oxide treatment, which is toxic to the human and natural environment.

In this study was evaluated the influence of EB irradiation used for microbiological decontamination process on paper-based objects. Three different kinds of paper (Whatman CHR 1, office paper and newsprint paper) were treated with 0.4, 1, 2, 5, 10 and 25 kGy electron beam irradiation. Optical and mechanical properties of different sorts of paper treated with e-beam, before and after the radiation process were studied. These results, which correlated with absorbed radiation doses effective for the elimination of Aspergillus niger (A.niger) allowed to determine that EB irradiation with absorbed radiation dose of 5 kGy ensures safe decontamination of different sorts of paper-based objects.