

### Difference between gamma ray and electron beam irradiations on the degradation of carboxymethylcellulose

최종일\*, 김재훈, 송범석, 이주운  
한국원자력연구원  
(choiji@kaeri.re.kr\*)

Carboxymethylcellulose (CMC) is used for a variety of applications due to its superior properties of high viscosity at a low concentration. In this study, the difference between a gamma ray (GR) irradiation from Co-60 and an electron beam (EB) irradiation with 10MeV Energy on the viscosity change in CMC solution was compared. At the same irradiation doses, the viscosity of the CMC solution was more severely decreased by GR. Electron spin resonance spectroscopy revealed that the radicals in the CMC were more generated by GR, but there was no difference in the Fourier transform infrared spectra of both irradiated CMC solutions. Also, the degree of substitution in CMC was not changed by both irradiation events. From these results, it can be concluded that EB irradiation could better minimize the decrease in the viscosity of the solution with CMC for the sterilization than GR.