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Radiolytic Cleavage of Fluorophore Tagged DNA

M. Brenowitz, S. Gupta, G. Xu, M. Chance (AECOM)

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The purpose of the study is to develop a fluorescent tagged technique for time-resolved footprinting of DNA and RNA using synchrotron x-ray beam and a DNA automatic sequencer. The technique will be fast and use non-radioactive materials, and thus will not require cumbersome safety procedures at the NSLS. Experimental setup of the DNA automatic sequencer and data processing techniques have been modified to improve the resolution, quantification, and fidelity of gel image data for footprinting. Two fluorophore labeled oligonucleotides have been exposed to synchrotron x-ray beam and analyzed by DNA automatic sequencer. The stability of fluorophores and fragmentation pattern of the oligonucleotides were evaluated.