

Abstract Submitted  
for the DNP11 Meeting of  
The American Physical Society

**Nuclear Physics of DNA: Evidence for Mutations of Free DNA Nucleotides in Nuclear Inelastic Scattering with 14 MeV Neutrons and Applications**<sup>1</sup> BOGDAN C. MAGLICH, LUZ MARIE AQUINO, CHRIS DRUEY, CALSEC California Science & Engineering Corp., ANNA Z. RADOVIC, UCI — First experimental study of interactions between *nuclear* particles whose  $\lambda_{DeBroglie} \sim 10^{-15}$  m and *nanoparticles* ( $r \sim 10^{-9}$  m) of free DNA nucleotides is presented. Each collision knocks out 1 atom and creates mutated DNA or DNA breakup. Targets: dAdenosine ( $C_{10}O_6N_5H_{13}P$ ), dCytodine ( $C_9O_7N_3H_{14}P$ ) and dThymidine ( $C_{10}O_8N_2H_{15}$ ), differing by 1 O or 1 C atom. We measured high-resolution prompt  $\gamma$  spectra of  $\sim 10^7$  inelastic scatterings of 14 MeV n's:  $n+O \rightarrow O+n'+\gamma$  (6.128 MeV) and  $n+C \rightarrow C+n'+\gamma$  (4.44 MeV). C or O ejection from 3 DNA's should manifest itself as 3 (2)  $\gamma$  peaks corresponding to 6, 7, 8 O (9, 10 C). We observed 3 O  $\gamma$  peaks containing  $8,526 \pm 400$ ,  $10,495 \pm 402$ ,  $11,448 \pm 405$  each; and 2 C peaks, as expected; and decoded stoichiometry of 3 DNA's with  $3-5 \sigma$  in 30', signal/background  $\sim 2\%$ . Applications of *femto atometry* to genometrics, genetic engineering and noninvasive cancer diagnostics will be presented. . . (maglich@calseco.com)

<sup>1</sup>ICBP 7<sup>th</sup> International Conference on Biological Physics, 2011.

Christian Druey  
CALSEC California Science & Engineering Corp.

Date submitted: 01 Aug 2011

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