

Abstract Submitted  
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**DNA damage and its mechanism induced by cisplatin and 10 eV electron collision**<sup>1</sup> YEUNSOO PARK, YOUNG ROCK CHOI, YOUGHYUN KIM, DAE CHUL KIM, National Fusion Research Institute, PLASMA FUNDAMENTAL TECHNOLOGY RESEARCH TEAM, PLASMA ELEMENTAL TECHNOLOGY RESEARCH TEAM — Low energy electrons (LEE, especially below 10 eV) can generate strand breaks on DNA via energy resonance mechanism named dissociative electron attachment (DEA). Interestingly, this indirect damage is a considerable yield compared to direct damage by high energy quanta ionization. To better understand of LEE roles on DNA damage in plasma and radiation fields, it needs to investigate experimental and theoretical studies at the molecular level. Definitely, it needs diverse interaction data between LEEs and biomolecules to interpret damage mechanism. We have tried to investigate DNA damage induced by single and synergistic effects of cisplatin and 10 eV electron. All dried DNA samples were irradiated by 10 eV electrons under ultra-high vacuum. And then, the samples were analyzed by high-performance liquid chromatography-tandem mass spectrometry. We compared the yields of different types of DNA damage such as strand break, base release and modification. We also suggested the possible mechanisms of DNA damage originated by cisplatin bonding and LEE collision based on current experimental findings. Finally, we expect that this study can help to find out the cause of cancer or genetic diseases and a novel therapy for them.

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