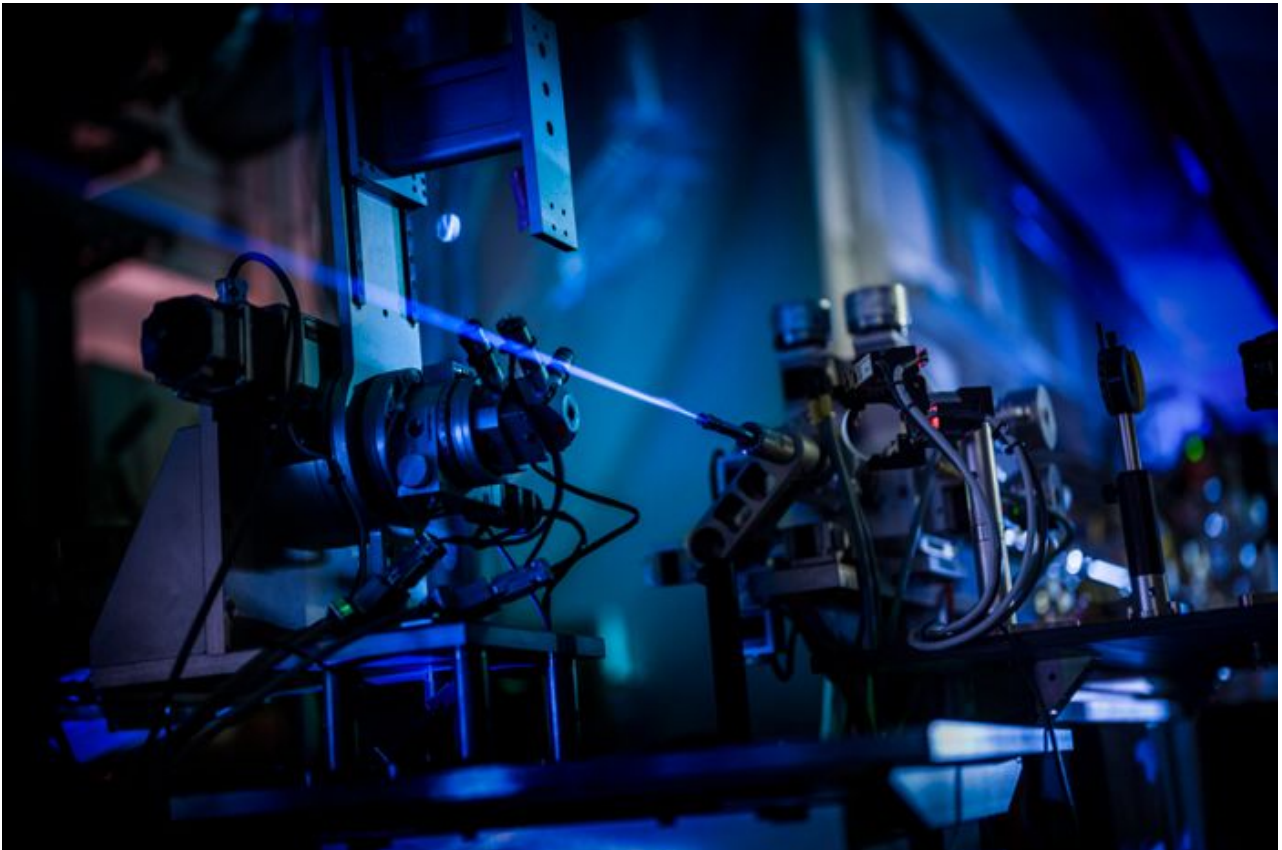




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## The Technique To Observe The Radiation Change Over Quadrillionth Of A Second

BY DONALD BIDEN ON 20TH SEPTEMBER 2019

Scientists at Nanyang Technological University, Singapore have developed a technique to observe how radiation damages molecules over time frames of just one quadrillionth of a second or a femtosecond.

The technique involves dissolving organic molecules in water to simulate the state molecules are found in biological tissue. It allows the research group to see radiation harm happen in organic fabric and molecules with higher precision and readability than ever earlier than. Nuclear or ionizing radiation can damage organisms by altering DNA and other biological molecules as it disintegrates the chemical bonds holding atoms together.

Using the new technique, the scientists watched the vibrations generated by collisions of ionizing radiation particles with a natural molecule, which ultimately brought about it to interrupt aside after undergoing violent stretching, bending, and twisting motions. These vibrations solely occurred when the electrons have been dissolved in water, which represents a significant advance over earlier research.

Associate Professor Zhi-Heng Loh, an assistant chairman at NTU's College of Physical & Mathematical Sciences who led the analysis, stated, "That it is the first time anybody has noticed ionization-induced molecular dynamics in aqueous options on femtosecond time scales. In previous research, scientists have been only able to observe the products of ionization after the molecule had already been broken aside.

The study used methods from femtochemistry to capture how atoms and molecules behave at ultra time scales, as in the formation or breaking of chemical bonds that take a few quadrillionths of a second, or femtoseconds. Femtochemistry uses lasers that emit incredibly brief pulses of light, and every vibration creates a snapshot of the chemical response. These can then be stitched together just like the frames of a video, to look at extremely-quick chemical processes from beginning to finish.

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chemical processes

molecule

Technique



***Donald Biden***