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Abstract for an Invited Paper
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Ultrafast dynamics in DNA base pairs following ultraviolet excitation.¹

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Photo-protective mechanisms in DNA are essential to maintain the integrity of the genetic code by preventing damage from absorption of solar ultraviolet (UV) radiation. We have used time-resolved infra-red (TRIR) spectroscopy to observe the dynamics of Watson-Crick nucleobase pairs following absorption of femtosecond UV laser pulses. The base pairs are prepared as nucleosides in solution, and photo-induced dynamics are probed in the carbonyl and N-H bond stretching regions using broadband IR pulses with picosecond time resolution. Results will be presented for the guanine-cytosine (G-C) base pair, contrasting the rapid recovery of ground-state products (the photo-protection pathway) with formation of other photoproducts which might represent photo-damage mechanisms. This work is a collaboration with the group of Prof F. Temps (Christian-Albrechts-Universitat zu Kiel).

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