

UNUSUAL ATOM DISPLACEMENTS IN TiO_2 DURING FLASH SINTERING

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We report on in-situ measurements of displacements for Ti and O atoms within a TiO_2 unit cell during flash sintering, where one species (O) moves much more than the other. The heart of these investigations is focused on the hypothesis that colossal concentrations of defects, in the form of Frenkel pairs are generated which lead to abnormal kinetics of diffusion and phase transformations. These experiments will continue to provide new information which can be built into atomistic simulations to provide a scientific basis for the flash phenomena.

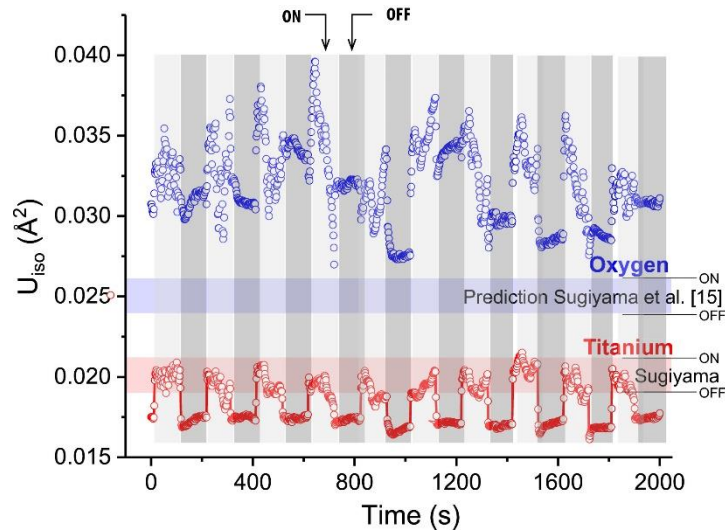


Figure 1. Measurements of U_{iso} for O (blue) and Ti (red) atoms. The bands show the estimates from baseline data with single crystals at specimen temperatures for the ON and OFF periods of the flash cycles.