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## The oxidation behaviour of a melt infiltrated (MI) SiC/SiC matrix composite (CMC) at high temperature in air

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Ceramic matrix composites (CMC) have received significant attention from many researchers for being excellent candidates for gas turbine applications. Using CMCs led to a significant improvement in fuel consumption and thrust to weight ratio in comparison to metal based alloys. In addition, the low density of CMCs allows potential weight savings of up to 30% comparing to Ni-based super alloys. Si-based ceramics have excellent oxidation resistance due to the formation of a protective silica layer when it reacts with dry air, however their oxidation behaviour is not fully understood. Oxidation behaviour of silicon melt infiltrated SiC/SiC ceramic matrix composites (CMC) was studied in air up to 1400°C for 1, 5, 24 and 48 h in a furnace. Weight gain and oxide layer thickness measurements were performed to study the oxidation kinetics and how the oxidation temperature and time affect the oxidation kinetics of SiC/SiC composites. Different characterisation techniques were used to study the formation and the nature of oxide layer (SiO<sub>2</sub>).

### Biography

Nasrin Al Nasiri has joined Imperial in December 2010 as a PhD student in the Department of Mechanical Engineering. Her PhD was about investigating the influence of microstructure of SiC materials on the mechanical behavior at room temperature. She was the first to quantify slow crack growth of SiC at ambient conditions. She has obtained her BSc and MSc degrees in Aerospace Engineering at Delft University of Technology, The Netherlands. After her PhD, she worked on the oxidation behavior of SiC ceramic matrix composites (CMCs) and designing new environmental barrier coatings. She has been awarded with the Imperial College Junior Research fellowship in November 2016 for a funding of three years. In September 2018, she has started her Royal Academy of Engineering Research Fellowship where she will be investigating the performance of ceramic composites and developing coating technologies for aerospace, energy and automotive sectors.

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