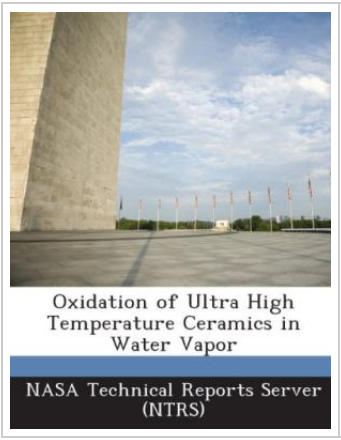

Oxidation of Ultra High Temperature Ceramics in Water Vapor

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 24 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Ultra High Temperature Ceramics (UHTCs) including HfB2 20v0 SiC (HS), ZrB2 20v0 SiC (ZS), and ZrB2 30v0 C 14v0 SiC (ZCS) have been investigated for use as potential aeropropulsion engine materials. These materials were oxidized in water vapor (90 percent) using a cyclic vertical furnace at 1 atm. The total exposure time was 10 h at temperatures of 1200, 1300, and 1400 C. CVD SiC was also evaluated as a baseline for comparison. Weight change, X-ray diffraction analyses, surface and cross-sectional SEM and EDS were performed. These results are compared with tests ran in a stagnant air furnace at temperatures of 1327 C for 100 min, and with high pressure burner rig (HPBR) results at 1100 and 1300 C at 6 atm for 50 h. Low velocity water vapor does not make a significant contribution to the oxidation rates of UHTCs when compared to stagnant air. The parabolic rate constants at 1300 C, range from 0. 29 to 16. 0 mg(sup 2)cm(sup 4)h for HS and ZCS, respectively, with ZS results between these two values. Comparison of results for UHTCs tested...

Reviews

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