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## The evolution of pores in thermal barrier coatings under volcanic ash corrosion using X-Ray computed tomography

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**Abstract:** Characterization of the evolution of pores in thermal barrier coatings (TBCs) under volcanic ash (VA) corrosion is essential for assessing coating premature failure. As a nondestructive three-dimensional visualization method, X-Ray computed tomography (CT) is used to quantitative investigate the pore structure in ceramic layer. An image morphological method combining Top-Hat and region growing method is applied to separate the pores and background. The change of porosity, pore size and shape resulting from VA corrosion were obtained, which is consistent with the results of mercury infiltration porosimetry (MIP) and scanning electron microscope (SEM).

**Keywords:** Thermal barrier coatings; Volcanic ash corrosion; X-Ray computed tomography; Pores

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