

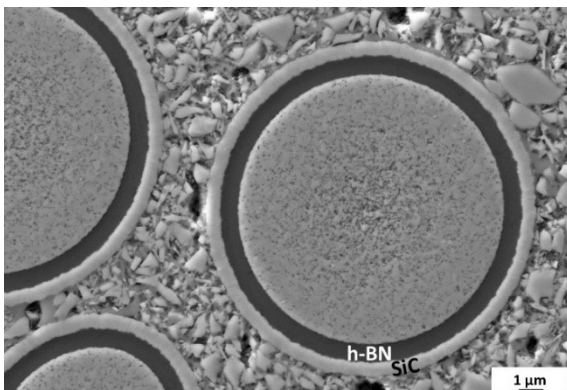
Das Fraunhofer IKTS forscht in verschiedenen Bereichen zu Keramiken und CMC. // The Fraunhofer IKTS conducts research on ceramics and CMC.

Fraunhofer IKTS develops CMC for use in combustion chambers of gas turbines, mechanical engineering and plants of the chemical industry. SiC/SiC is predestined for application temperatures above 1,100 °C, especially when high strength and creep resistance are required due to mechanical stress.

With the equipment available at IKTS, oxide and non-oxide CMC with tailored properties can be produced, starting with the coating of the fibers via CVD, the shaping and densification of the matrix with slurry/PIP/LSI up to the application of corrosion protection coatings (EBC), e.g. via liquid phase coating (slurry) and laser sealing. Important mechanical parameters up to 1,600 °C can

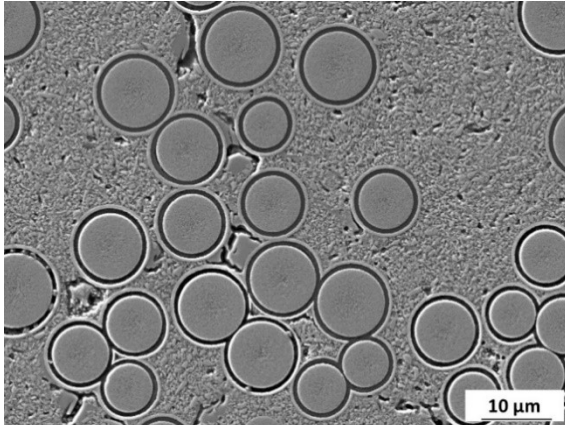
be determined for component design. CMC and corrosion protection coatings (EBC) with improved long-term stability are developed on the basis of hot gas tests in a flowing fuel gas atmosphere under defined water vapor partial pressure. These dense materials are not damage tolerant without fiber coating. Fiber coatings are being developed using the CVD process to ensure the required crack deflection in the material and to protect the SiC fibers from oxidation. Coatings based on PyC and hBN are state of the art. Current research is focused on the deposition of double layers, e.g. with SiC top layer in a continuous coating process. Our Offer:

- Coating of SiC fibers (CVD), layer development and characterization.
- Production and development of CMC with adapted properties,
- Mechanical characterization up to 1,600 °C
- Oxidation tests, investigation of stability against hot gas corrosion (950 °C 1,450 °C, 50-100 m/s),



SiC/SiC produced via PIP process: BN+SiC double layer on SiC fibers @ FhG IKTS

- Development of anti-corrosion coatings (EBC)



**SiC/SiC produced via PIP process: SiC fibers
in dense SiC(N) matrix @ FhG IKTS**