

Experimental report

15/09/2016

Proposal: TEST-2612

Council: 4/2016

Title: Hochleistungskeramik, test for future proposal

Research area:

This proposal is a new proposal

Main proposer: Juergen SCHREIBER

Experimental team: Mathias HERRMANN
Juergen SCHREIBER

Local contacts: Thilo PIRLING

Samples: Si
Diamond
SiC

Instrument	Requested days	Allocated days	From	To
SALSA	2	2	01/06/2016	03/06/2016

Abstract:

Test experiments concerning internal stress in superhard SiSiC-Diamond materials

First measurement of stresses in graded diamond/ SiC composites (Fig. 1) were carried out in the SALSA instrument 3rd June 2016. These preliminary experiments showed that the three phases can be measured. The first results (fig. 2 and 3) suggest, that at the Interface between the diamond containing layer and the SiSiC part a variation of stress takes place. A very detailed analysis of the stresses needs the additional measurement of the stress free samples and an improved statistics of the peak measurement.

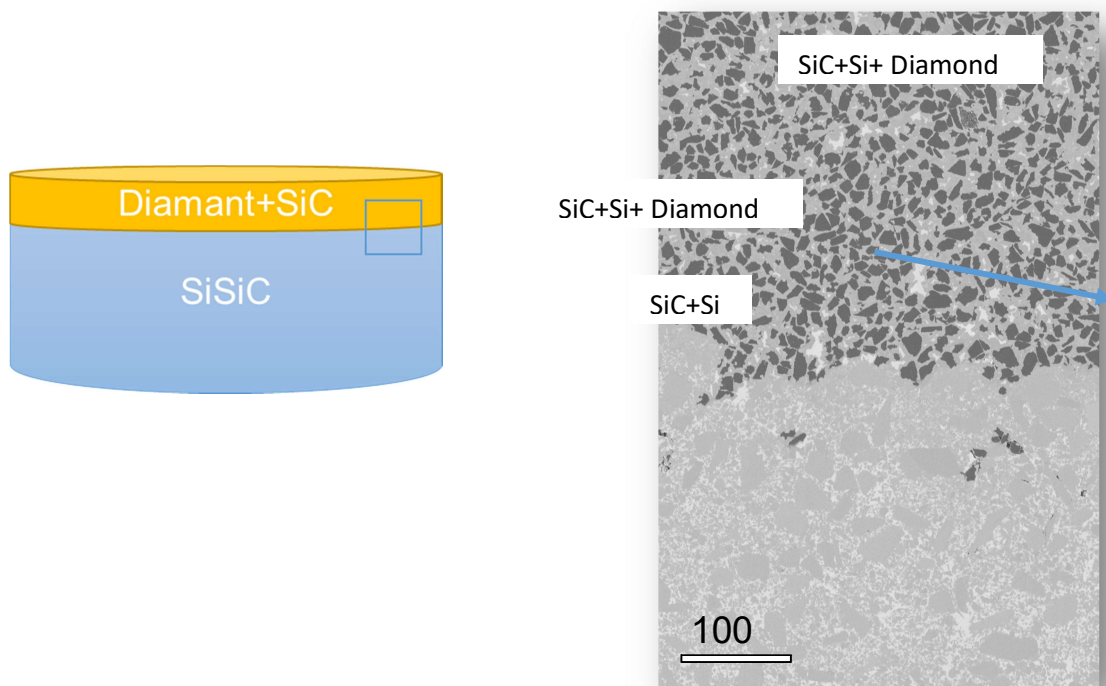


Fig. 1: Graded Diamond SiC composite (a Schematic view of the sample , b) microstructure at the interface (sample dimension $\varnothing$ 30 mm; Height 10 mm; thickness of Diamond SiC-layer appr.- 3 mm; mean Diamond Grain size 20 μ m)

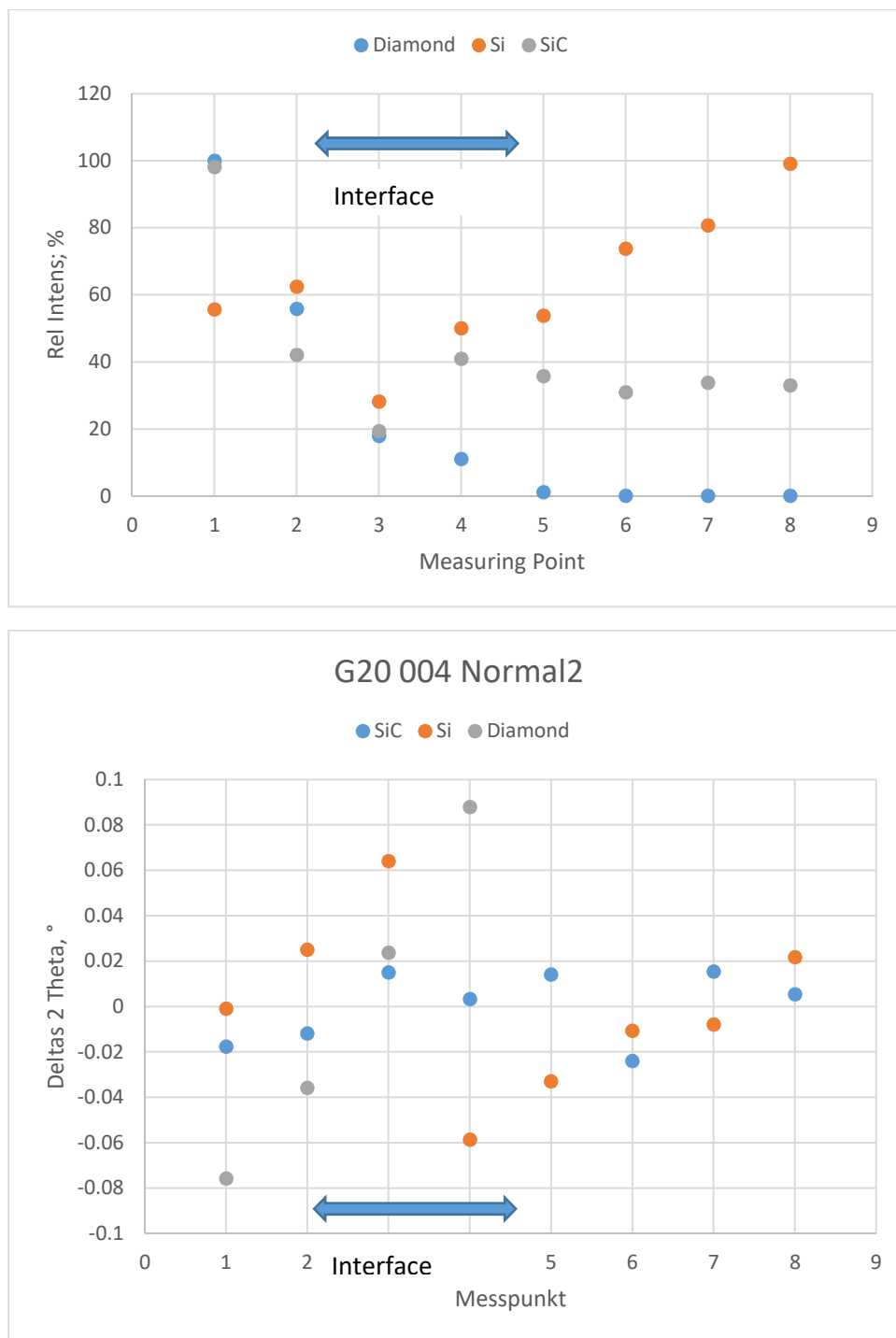


Fig. 2: Change of the intensities and of the angle across the Interface (Measured: normal direction)

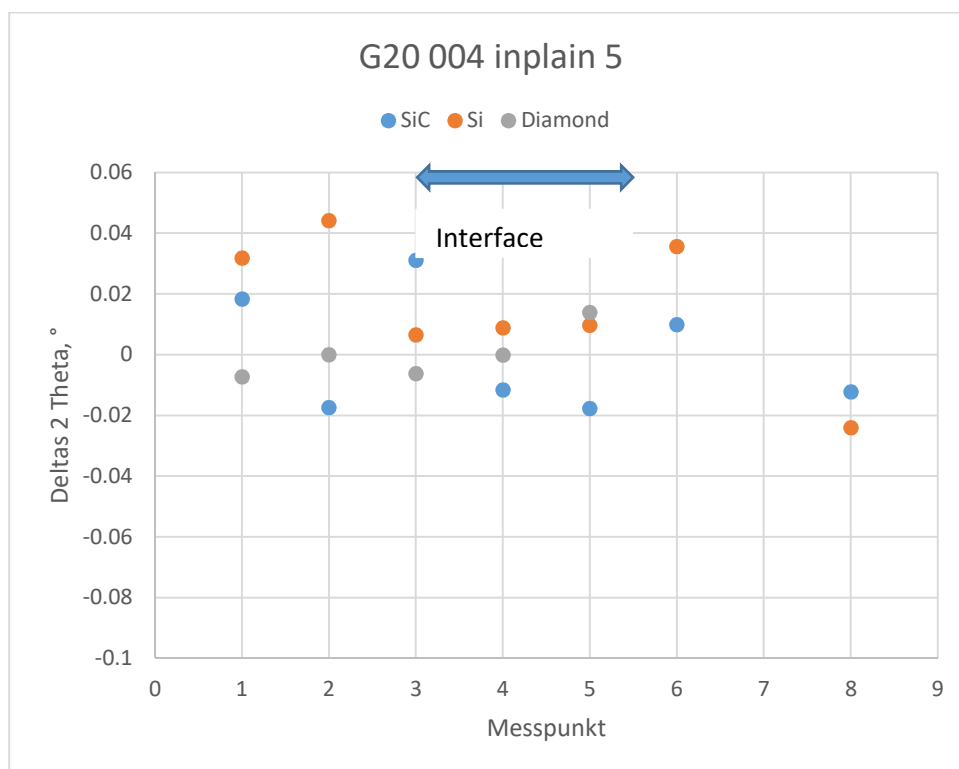
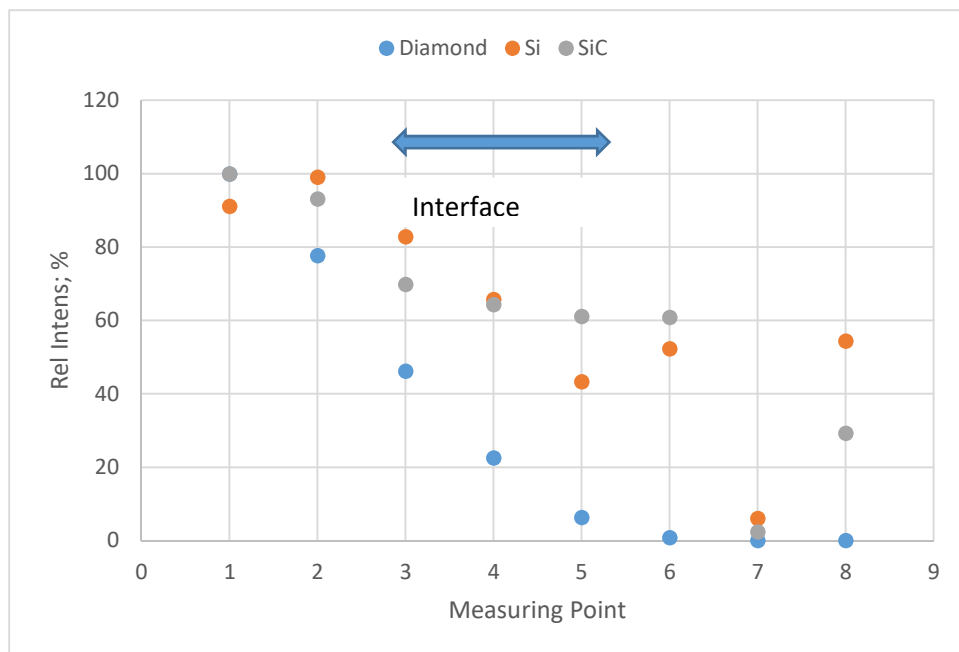


Fig. 3: Change of the intensities and of the angle across the Interface (Measured: inplain direction)