



Silicon Carbide Precision Polishing Comparison Study

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Abstract

The main objective of this comparison study is to compare performance of Qual Diamond diamond slurry with a competitor's similar type of slurry.

Results from this side-to-side comparison study, where particle size, duration of polishing, amount of slurry used, and polishing pad material are closely matched or the same, indicate superior performance of Qual Diamond diamond slurry to the competitor's.

Materials and Methods

- SiC Wafer Sample: 2" Diameter and 400 μm thickness, 4H N type.
- The samples are first planarized and have initial Ra value of 2 nm.
- The samples are then polished using Qual diamond polycrystalline slurry and competitor's polycrystalline slurry of the same size.

Lapping Parameter	Detail
Slurry Type	Poly 0.5-1
Load/Weight	5 lbs
Lapping Plate RPM	30 rpm
Slurry Setting	Manual
Lapping Time	60 mins
Plate/Pad	Pad
Auto Slurry Feed	NA

Polishing Apparatus & Setup



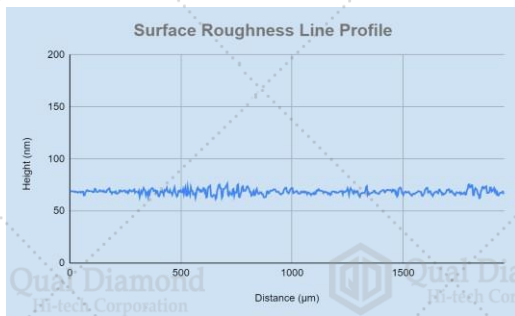
Weight

Glass plate where SiC wafer
is held underneath

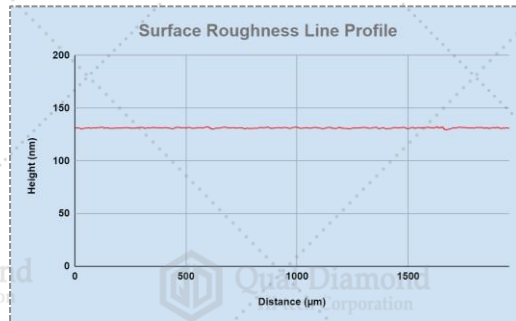
Polishing pad where
diamond slurry is applied

Catch Pan

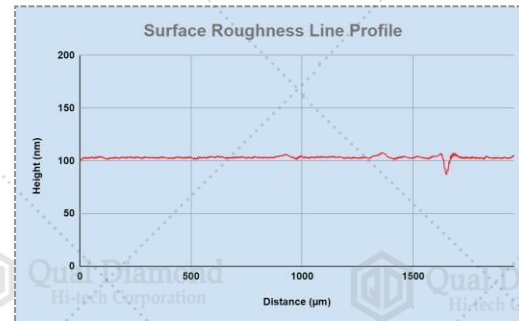
Precision Polishing Comparison Results



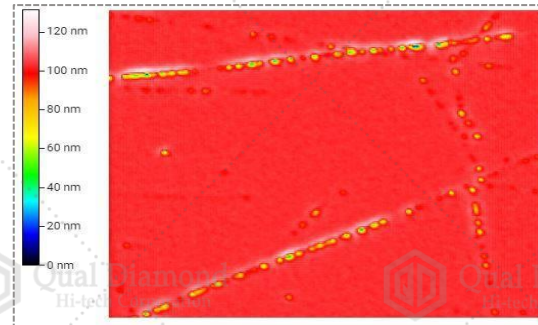
Initial Ra = 2 nm



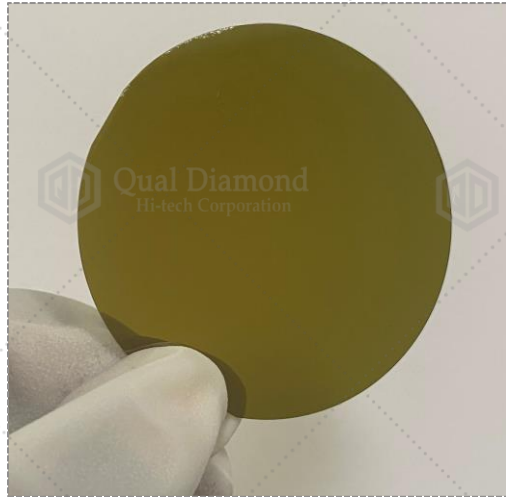
QD Ra = 0.24nm



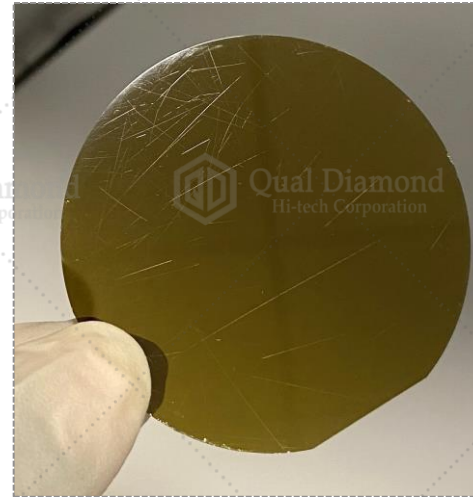
Competitor Ra = 0.68nm



Precision Polishing Finish Comparison



Qual Diamond



Competitor

Conclusion

- Qual Diamond diamond slurry shows exceptional surface roughness without any scratches.
- Competitor's slurry, however, shows several scratches on the surface and also has a higher surface roughness value.
- This demonstrates the effectiveness of Qual Diamond diamond slurry in precision polishing of advanced materials.
- This results also show that for a given period of time and same set of parameters, Qual Diamond diamond slurry outperform competitor slurry in every measure.