Noritake

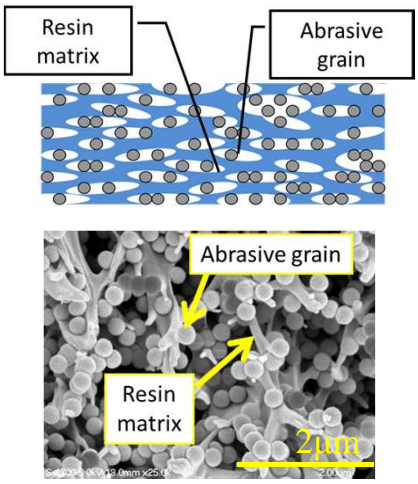
LHA pad

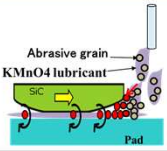
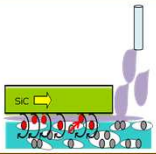
CMP pad with Loosely Held Abrasives

Concept

"LHA Pad" is a polishing pad containing abrasive grains held loosely.

The structure of the pad has advantages of both free abrasive tool and fixed abrasive tool.



		Loose abrasive (Current process)	LHA (New process)
Schematic of polishing process			
Charact-eristic	Scratch	△	○
	Planarization	△	○
	Removal rate	○	○
Conditioning of pad surface		○	△
Consu-mable	Pad	Nonwoven or Poly-urethane	Special resin+abrasive
	Polishing solution	KMnO4+abrasive	KMnO4

The advantage of LHA pad

☆1 Step polishing process☆

High removal rate,
Scratch free and no surface substrate damage

☆Long lifetime☆

Resin composition excellent in chemical resistance
Uniformly dispersed abrasive in pad

☆Wide range of use☆

Usable in KMnO4 liquid ; pH 3 -9

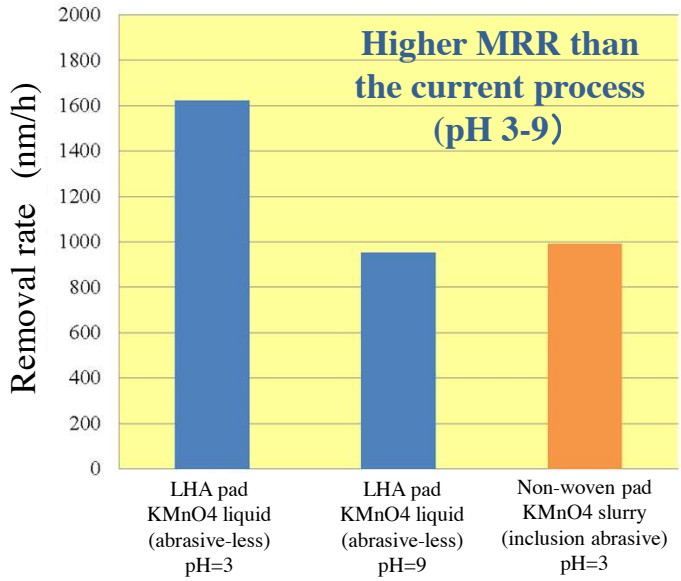
☆Abrasive-less polishing liquid☆

Possible circulation
low cost polishing liquid

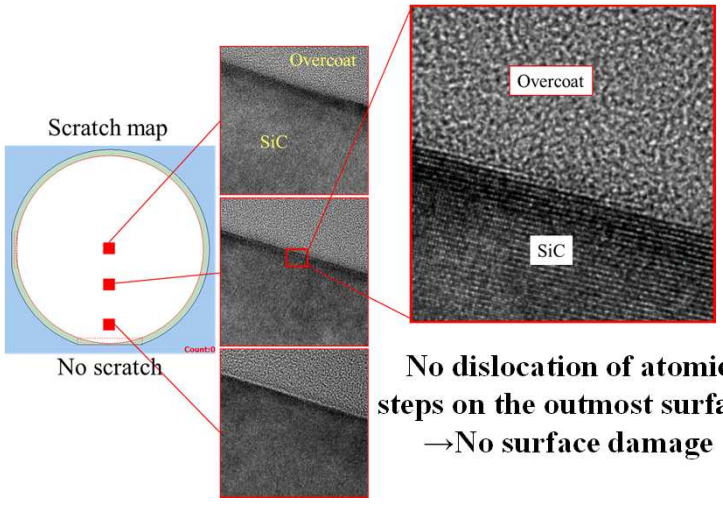
Polishing performance of 6inch SiC wafers

Conditions/Pressure：30kPa, Rotation speed:35rpm, Workpiece：6inch × 3pieces）

Removal rate



Evaluation of surface damage by TEM



No dislocation of atomic steps on the outmost surface →No surface damage

【Contact】 R&D Center, NORITAKE CO., LIMITED
Mail：kaihatsu_b9700@n.noritake.co.jp

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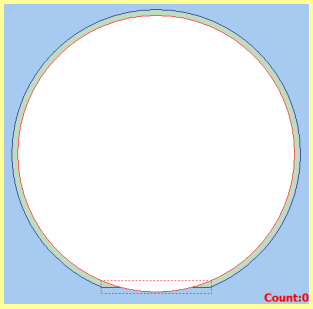
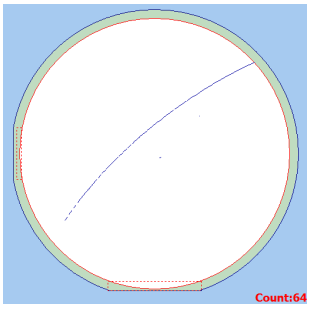
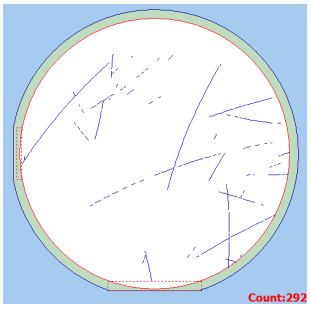
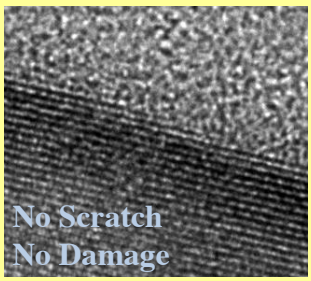
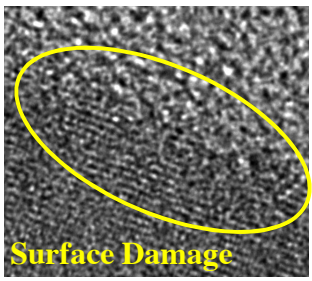
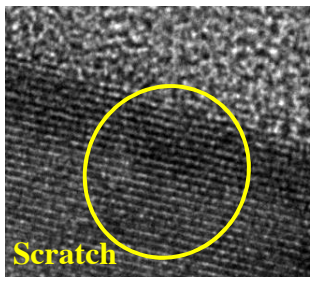
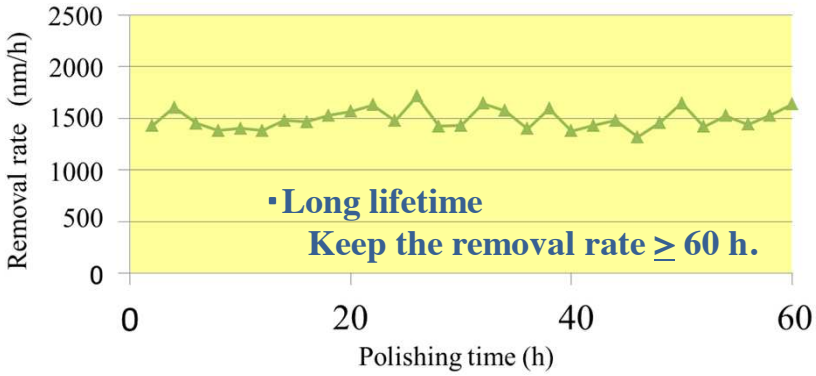
CMP pad with Loosely Held Abrasive

Comparative evaluation of the current polishing process

	LHA pad /KMnO4 lubricant	Nonwoven pad /KMnO4 slurry	Poly-urethane pad /KMnO4 slurry
Scratch map			
TEM Image			

Stability evaluation of removal rate

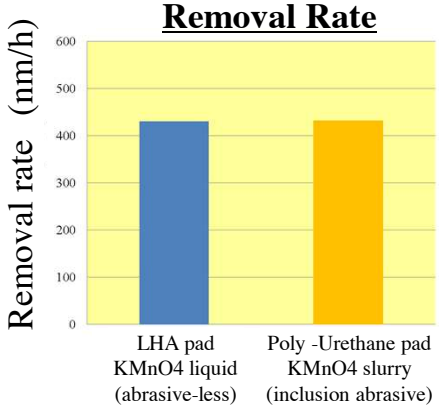


Polishing time	2hours × 30times=60hours
Workpiece	6 inch × 3 pieces/time
Pad conditioning	30seconds(every 2 hours)

Polishing performance of 2inch GaN wafers

Conditions/Pressure：73kPa, Rotation speed:60rpm, Workpiece：2inch × 1pieces）

Removal Rate



DIC Image

- The same MRR at current process
- Scratch - Free

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Mail：kaihatsu_b9700@n.noritake.co.jp