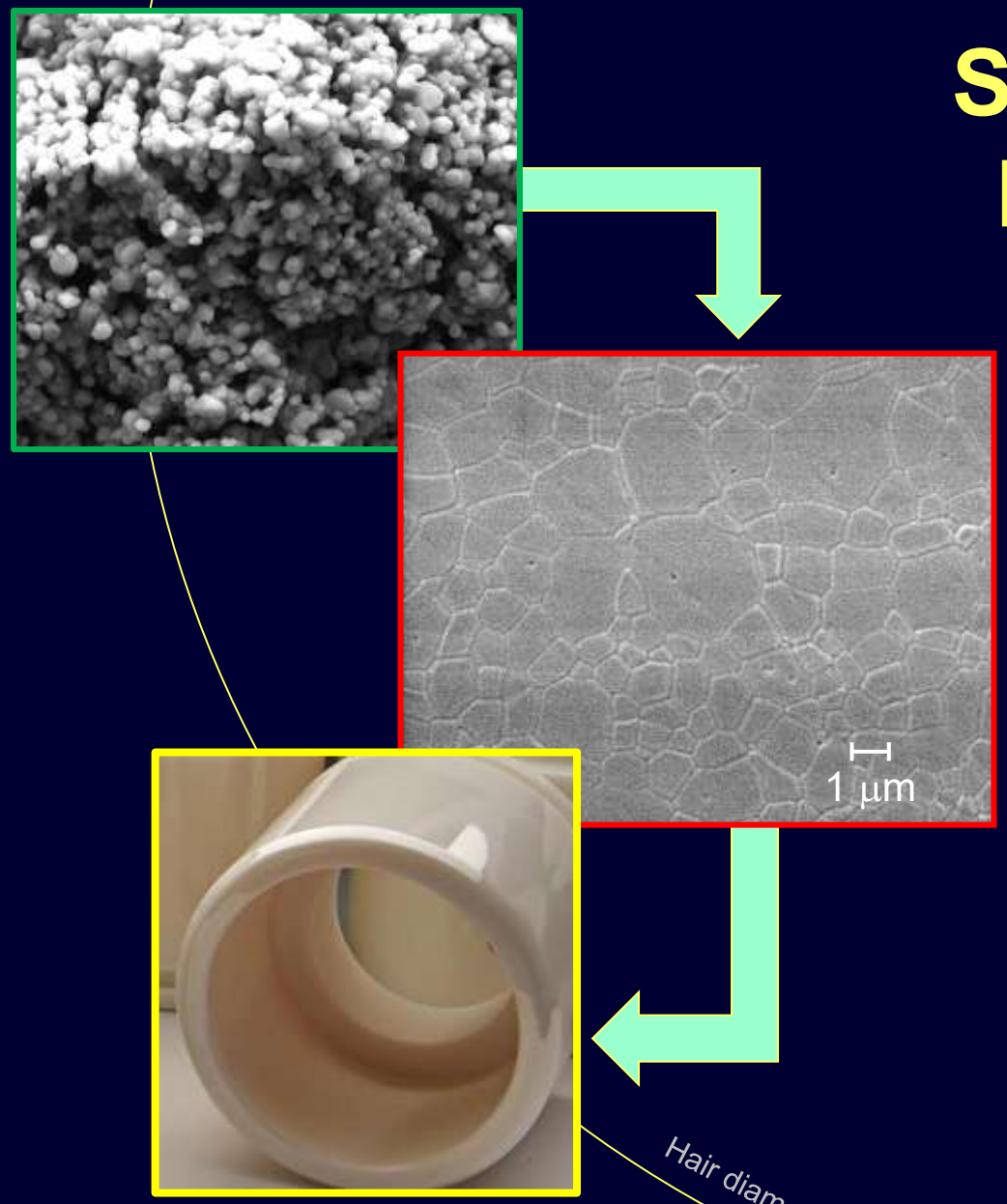


Sustainability & Efficiency in High-Performance Material Processing

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Ceramics Expo
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Evolution of Ceramic Manufacturing

Ceramic manufacturing –

Let's Chase the Correct Problem!

Sintering and Drying theory

*Problems are 'caused' by the **dryer / kiln / furnace**.*

∴ Fixing the dryer/furnace will solve problems.

Poor densification, cracking, warping, etc.,
are rooted in the processing and forming.

Industrial Sintering

Large Format Porcelain Tiles

Dry pressed (spray dried granulate)

Die fill is critical

Minimal lateral powder movement during pressing

Roller hearth kiln

1250°C max temperature

50 minutes (cold-to-cold)!

Continuous sintering of tapes.



Additive Manufacturing

Just another forming technique…

Summary

Proper sintering requires excellent processing.

Cracking and warping are a consequence of processing.

Additive manufacturing is just another forming technique – it is not a substitute for proper processing.

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ACERS SHORT COURSE

Foundations of Ceramic Processing

The American Ceramic Society
ceramics.org

Virtual short course instructed by William Carty, Ph.D.

May 26–June 4, 2026, on Tuesdays & Thursdays



SCAN HERE

ceramics.org/course/carty-ceramic-processing

Challenges for industrial sintering

After sintering, the compact has the same density everywhere.

This means greater shrinkage in lower density regions.

Greater shrinkage →→ tension during sintering (and drying).

Porosity can also inhibit grain growth.

So initially porous regions may have a finer pore structure than denser regions – less time for grain growth.

Process defects are not “fixed” during sintering. →

