

# Mechanical Property of Gravel Produced from Lunar Soil Simulant by Rapid Sintering Using Single-mode Microwave

Colorado School of Mines

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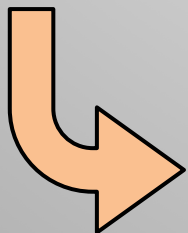
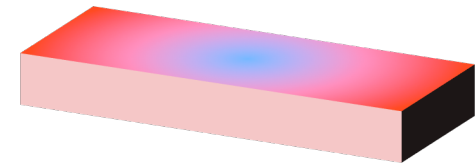
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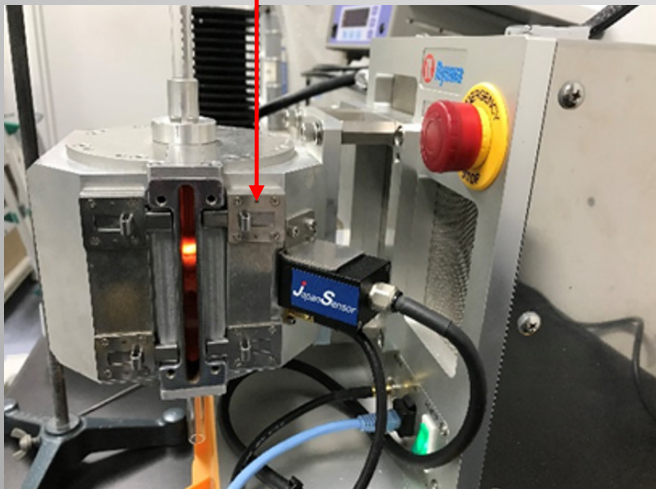
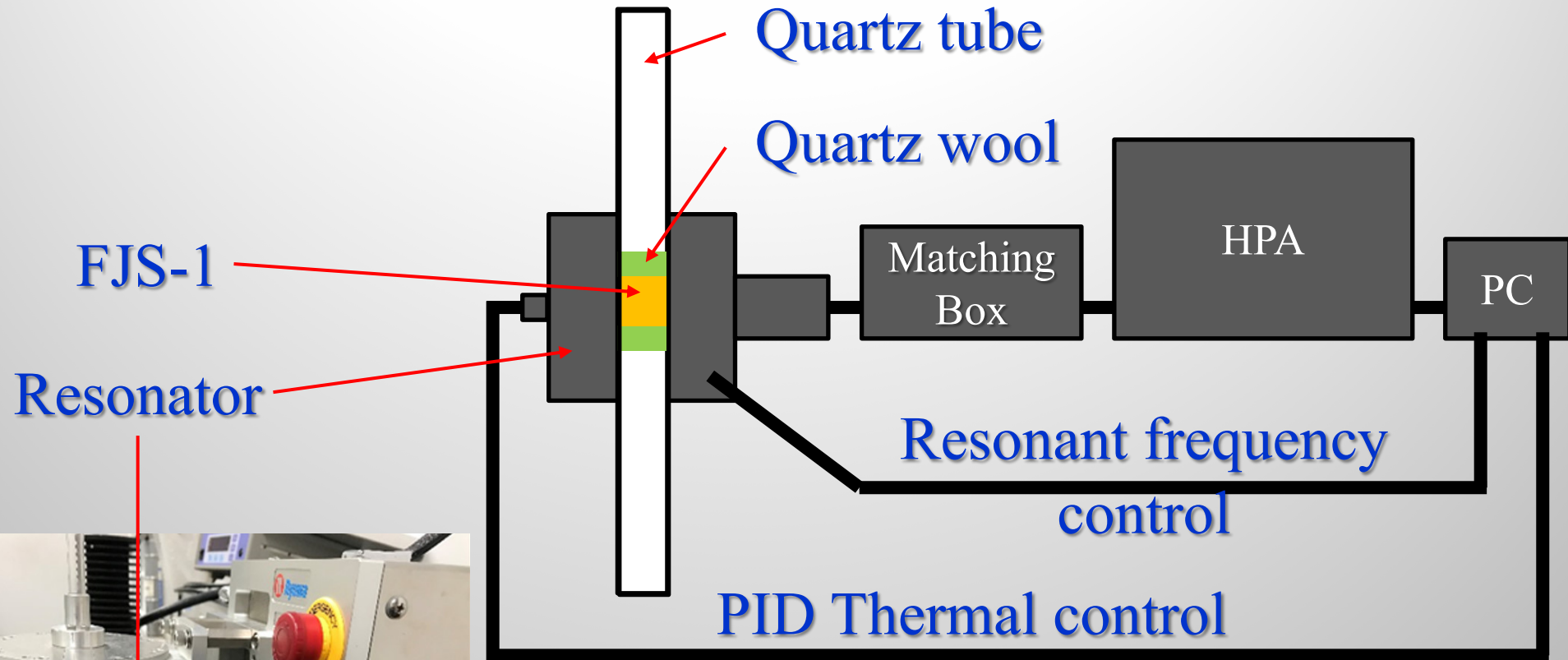
<sup>2</sup> Tokyo Institute of Technology

## ➤ Problems

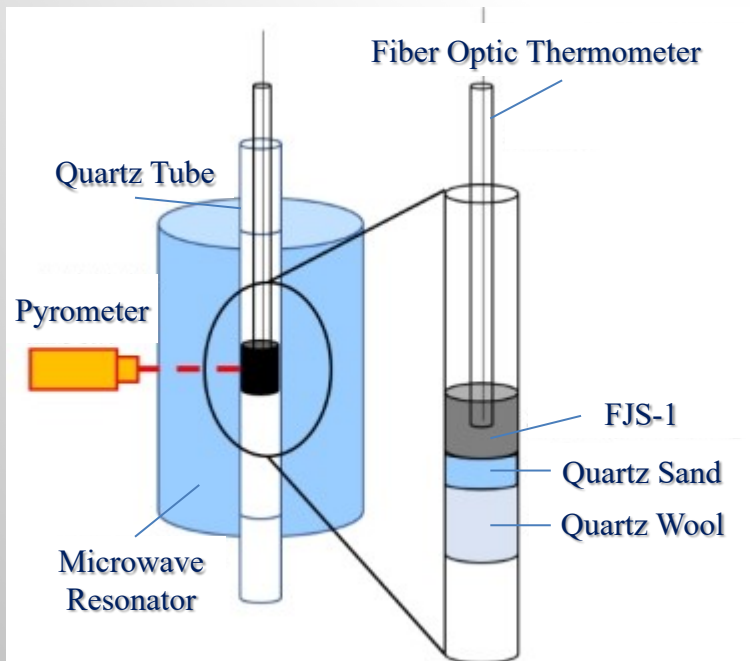
1. Susceptor is required for sufficient sintering by Multi-mode microwave.
2. Homogeneous sintering is difficult.
3. Molds/Formworks are required for making bricks.



- > Single-mode microwave resonator
- > Gravel as material for pavement, composites...



Microwave: Single-mode ( $TM_{010}$ )



Temperature



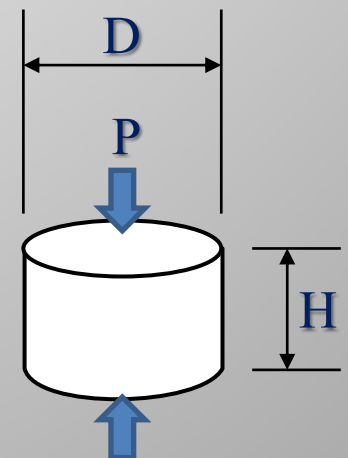
Point Load Test



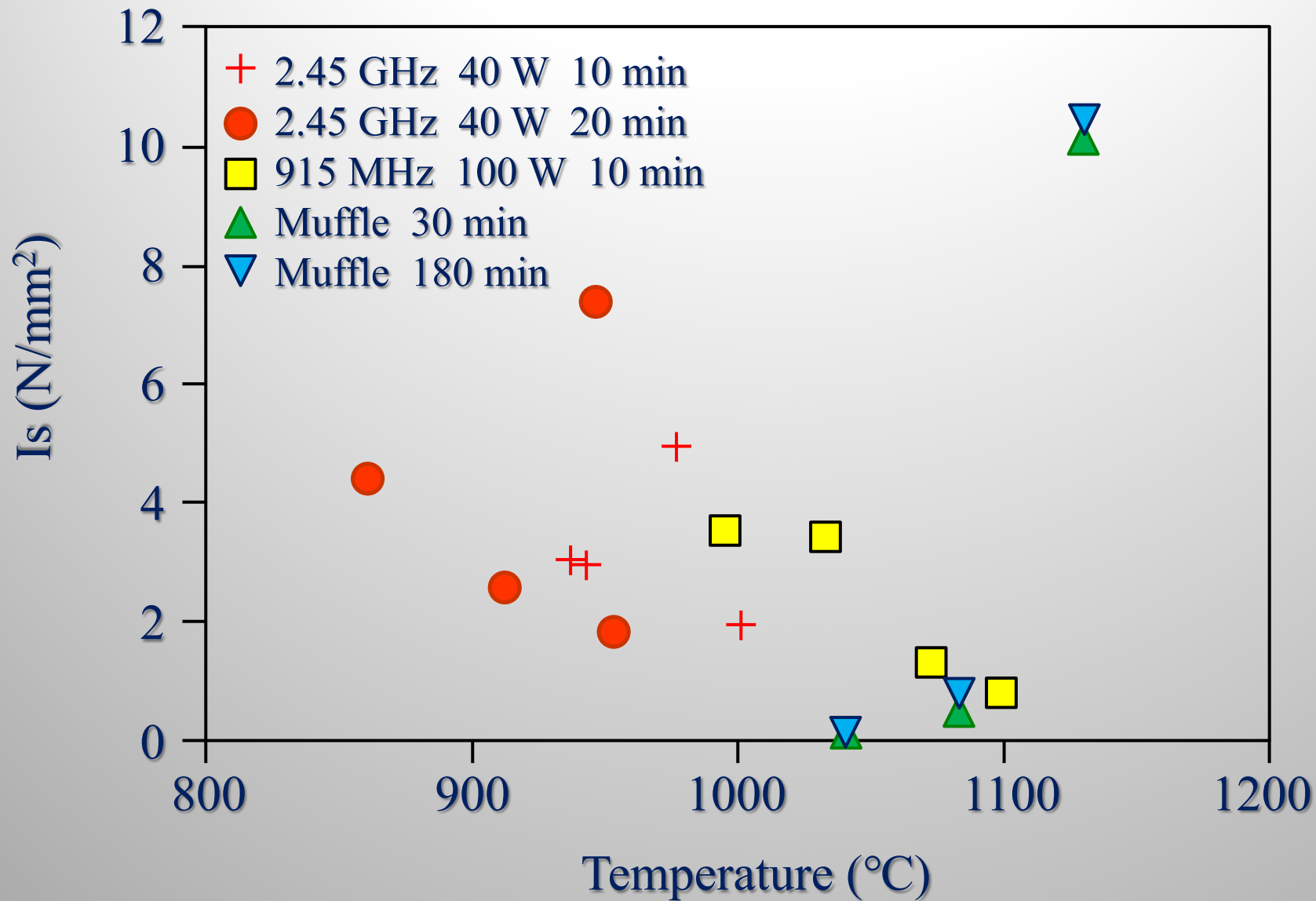
Sintered Material

Point Load Strength:  $Is = P / De^2$

$$\begin{cases} H > D: De = D \\ H < D: De^2 = 4DH/\pi \end{cases}$$









Technology Advancement Node for SpAce eXploration