

Background

✓ Requirement of alternative materials to replace Coking coal

• Previous research

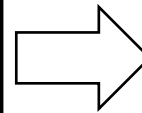
Coking coal + Biomass char
↓ Pyrolysis

Alternative coke that reduces carbon dioxide emissions

- ✓ Potential to be an alternative resource for coking coal

Problem

- Not carbon neutral
- Biomass char alone lowers the carbonaceous binding ratio



• Approach

- ✓ Using biomass tar as a binder to achieve both near carbon neutrality and high binding ratio.

Point of concern

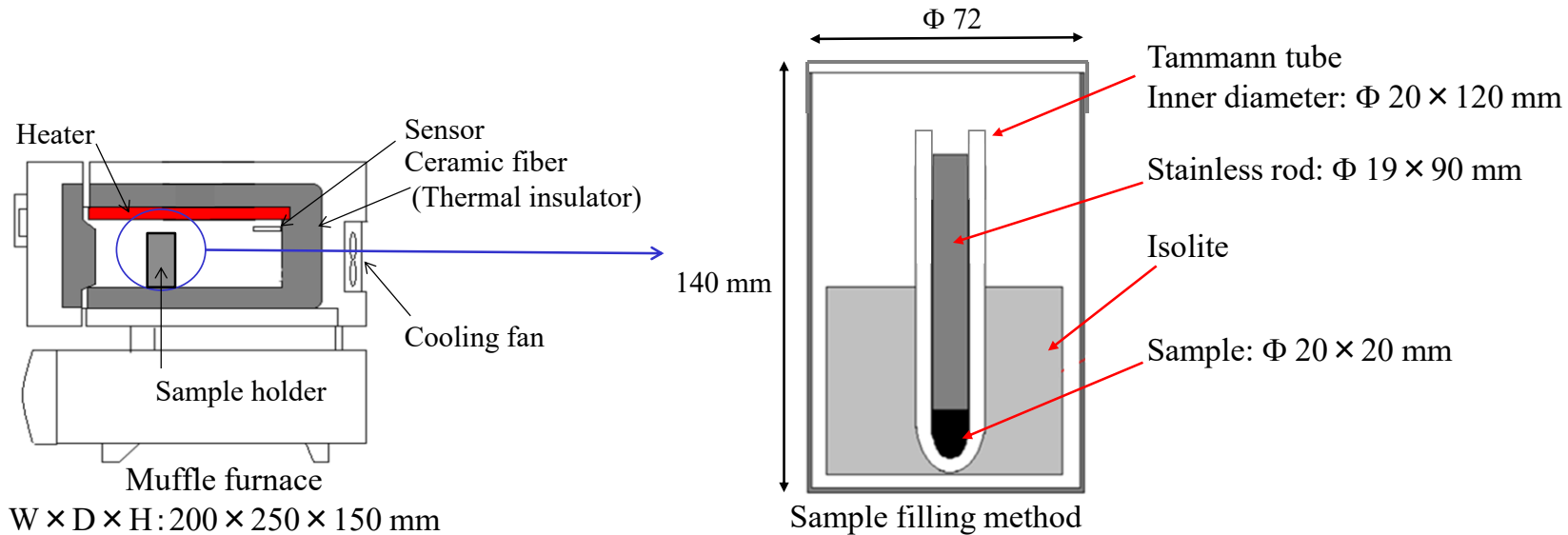
- Possibility that biomass materials alone cannot guarantee sufficient strength.



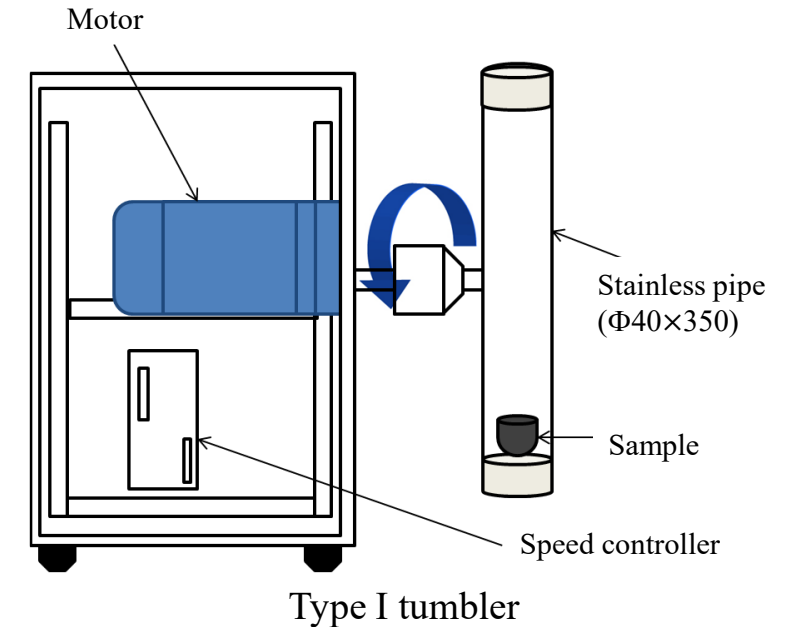
- ✓ Alternative coke is prepared by mixing coking coal in addition to biomass tar and biomass char.

Experimental method

- Creation of alternative coke



- Strength test



Creation of alternative coke



Evaluated by strength test

- Samples are removed every 5 minutes, sifted to + 1 mm and - 1 mm

Strength index

$$TI \text{ (Tumbler Index)} = \frac{\text{measured mass(+1mm)}}{\text{mass of sample}} \times 100 [\text{wt\%}]$$