

# Research and development of novel high-speed CO<sub>2</sub> capture inorganic solid materials from the atmosphere

## Zero Emission by 2050

➡ Materials that absorb CO<sub>2</sub> directly from the atmosphere are attracting attention.

Two important R&D items (1) and (2) by academia that are indispensable for the realization of carbon recycling.

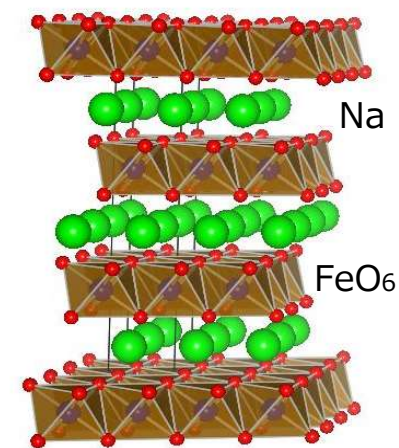
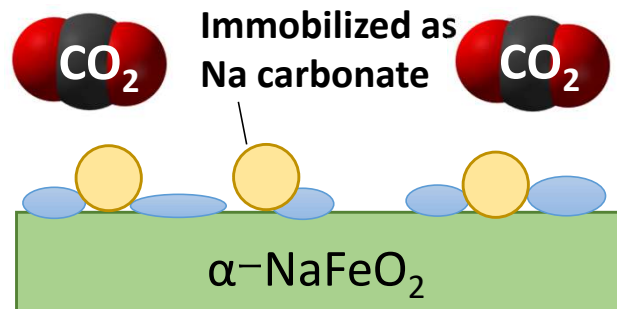
- (1) CO<sub>2</sub> conversion technology (electrolytic synthesis and CO<sub>2</sub> conversion technology)
- (2) Low-concentration CO<sub>2</sub> separation and capture technology (DAC)

## Sodium ferrite NaFeO<sub>2</sub>

Safe, inexpensive, and easy-to-use inorganic solid materials were discovered in original research (Seeds of our research).

➡ NaFeO<sub>2</sub> can contribute to direct CO<sub>2</sub> capture (DAC) from the atmosphere as described in (2).

### CO<sub>2</sub> absorption mechanism in room temperature and air



Layered structure of a type NaFeO<sub>2</sub>

Nano-size water droplets derived from water vapor are adsorbed and transformed into basic water droplets. → Realization of room temperature and high-speed absorption of atmospheric CO<sub>2</sub> by inorganic solids (NaFeO<sub>2</sub>).

## Carbon recycling

from NEDO HP

