EGEL

CO_2 GeoStorage:
Gravity-assisted EOR

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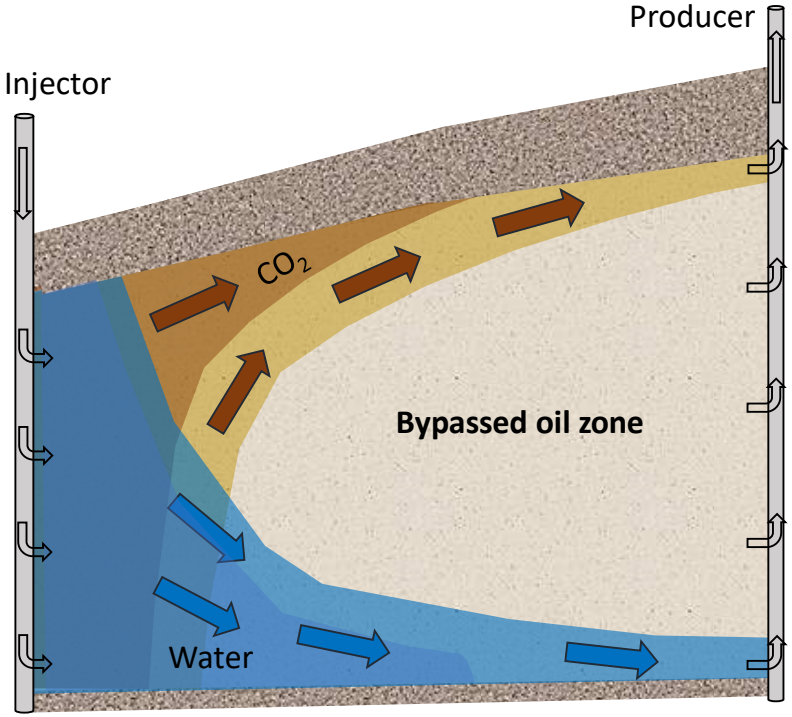
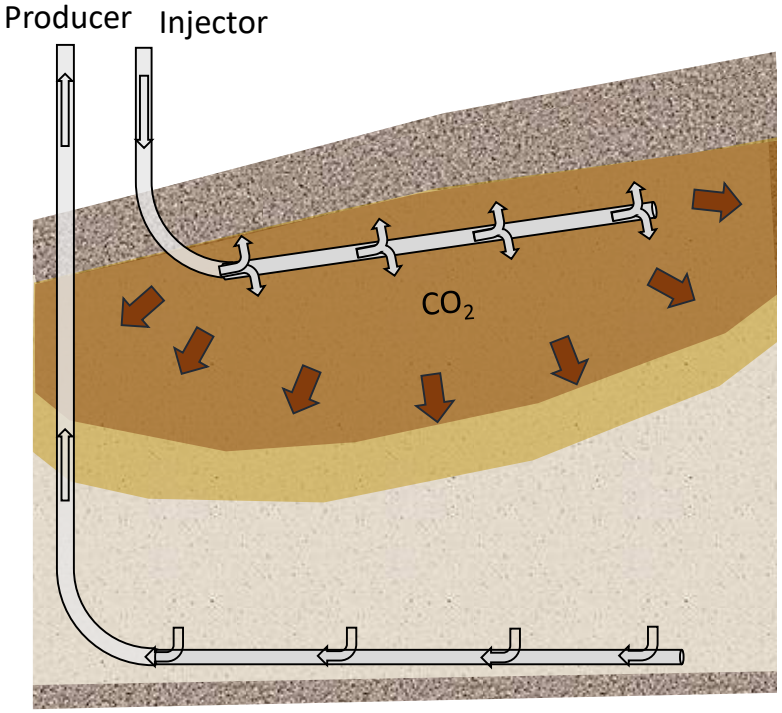
Introduction

WAG flood with CO_2^{SC}

(low ρ & η)



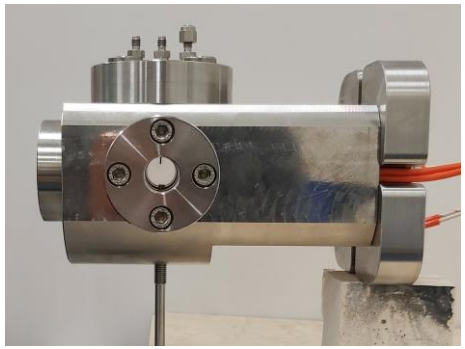
Gravity-assisted CO_2



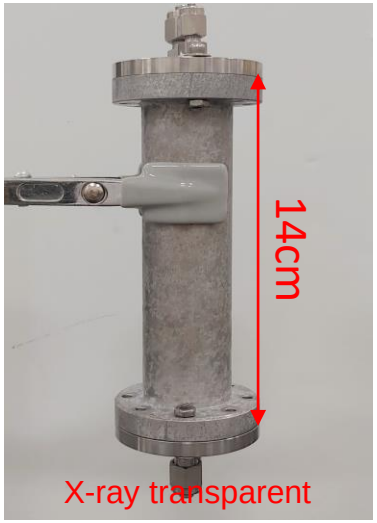
Experimental scales

Chambers: HP >15MPa & HT≈ 100°C

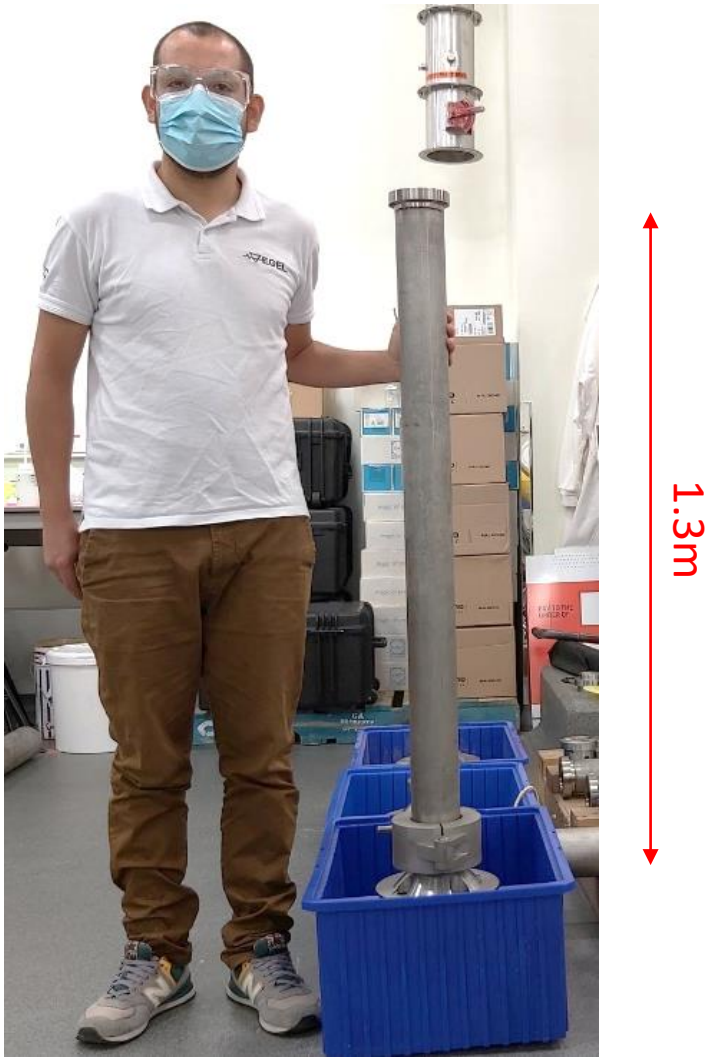
1. Pore Scale



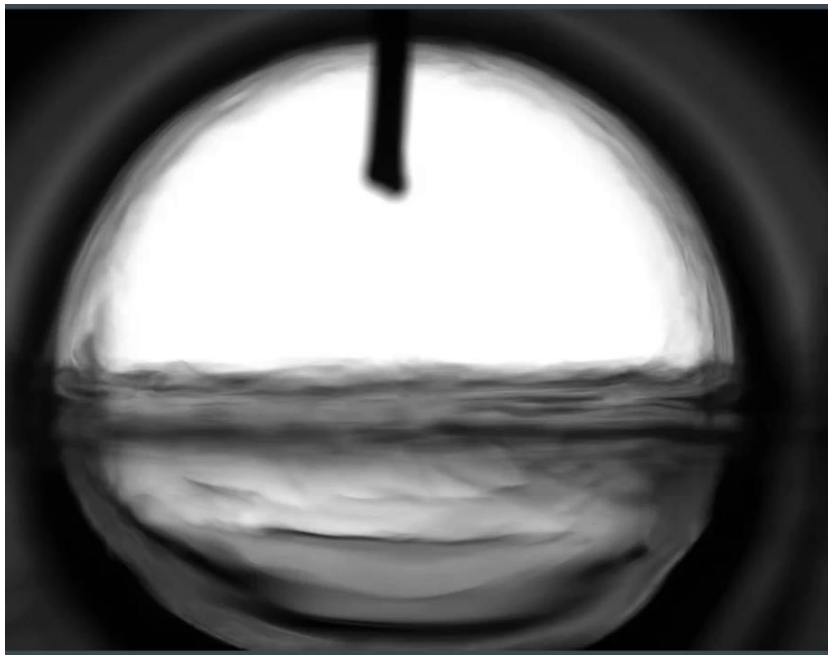
2. Layer Scale



3. Reservoir Scale

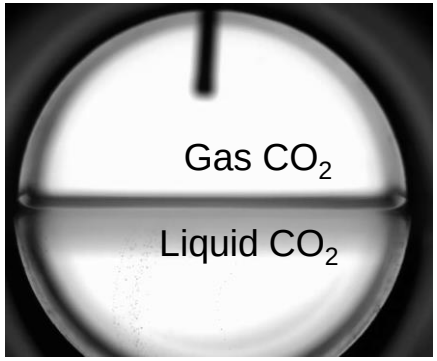


CO_2 Phase Transition

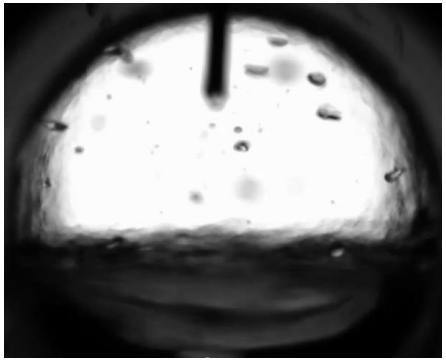


* 16 x Speed

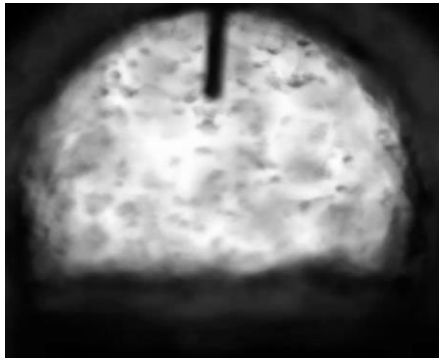
Temperature



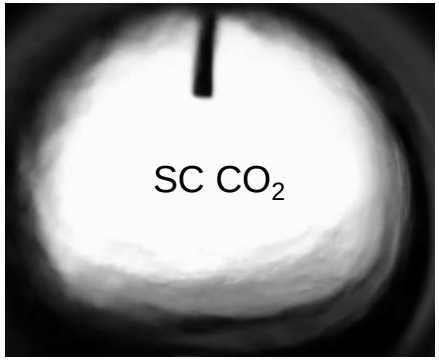
21°C – 8 MPa



25°C – 8.5 MPa

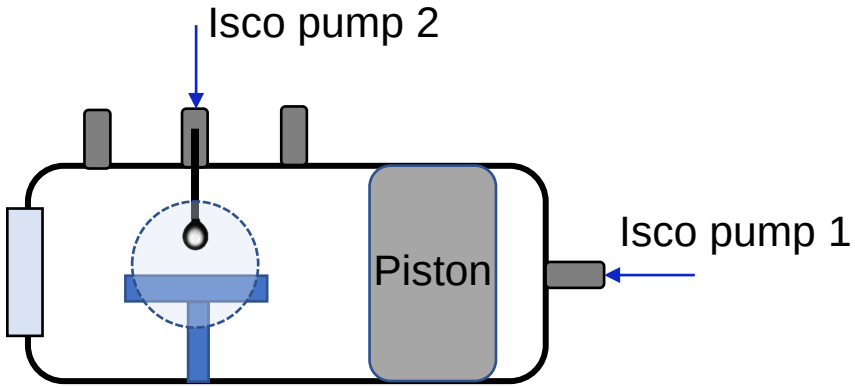


30°C – 9 MPa

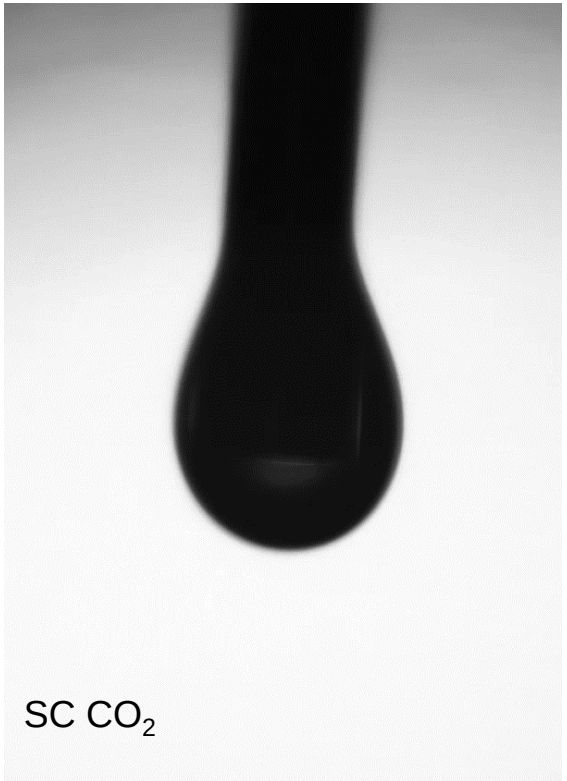


38°C – 9.5 MPa

Interfacial Properties



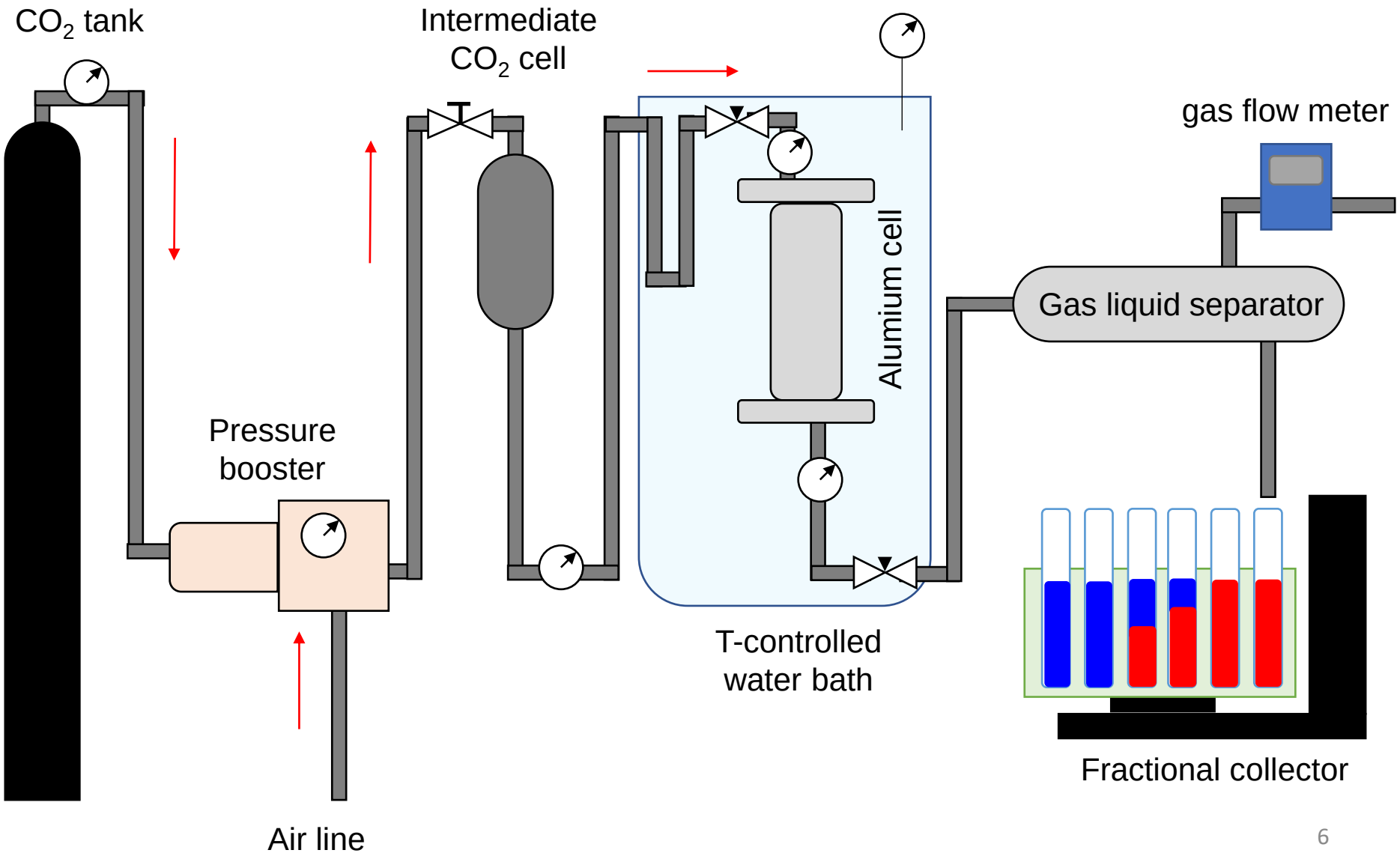
HPHT Tensiometer



Mineral Oil Droplet

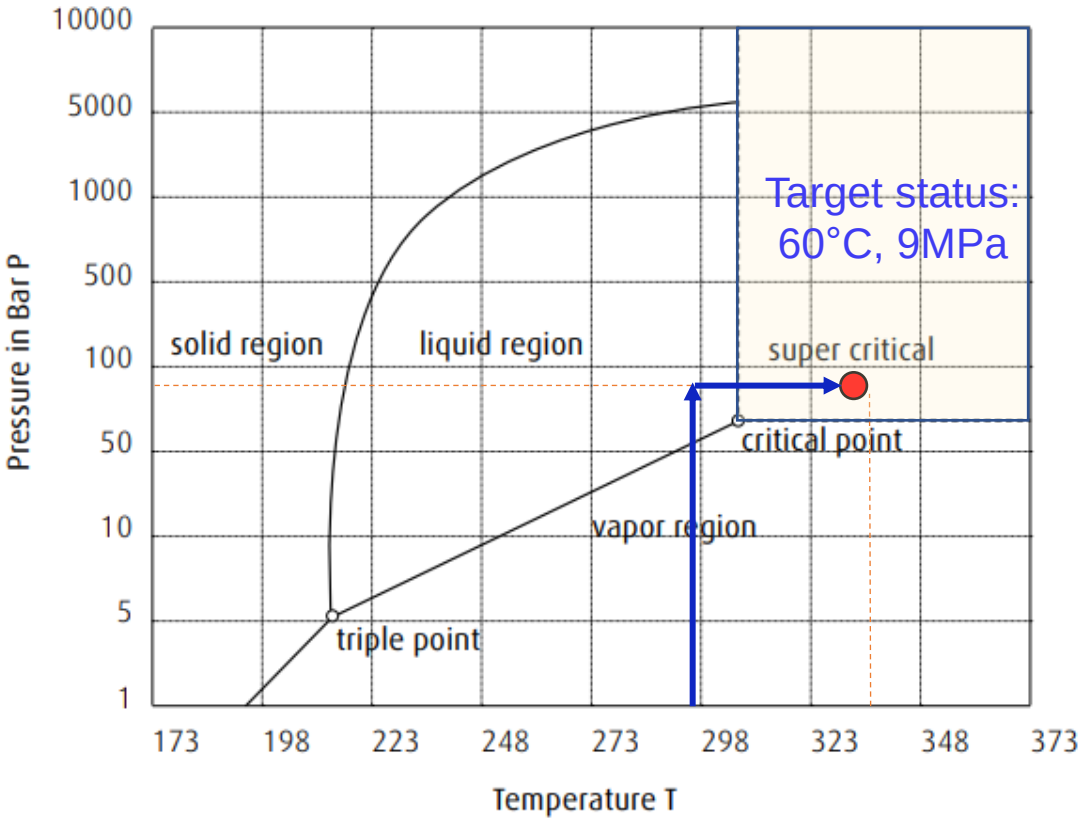
Interface:	Mineral Oil & CO_2^{SC}
P&T conditions:	9.5 Mpa & 38°C
Analysis:	ImageJ & Drop Analysis plugin
Interfacial Tension:	**2 mN/m**

Small Cell


CO_2 tank
Intermediate CO_2 cell
gas flow meter
Alumium cell
Gas liquid separator
Pressure booster
T-controlled water bath
Fractional collector
Air line

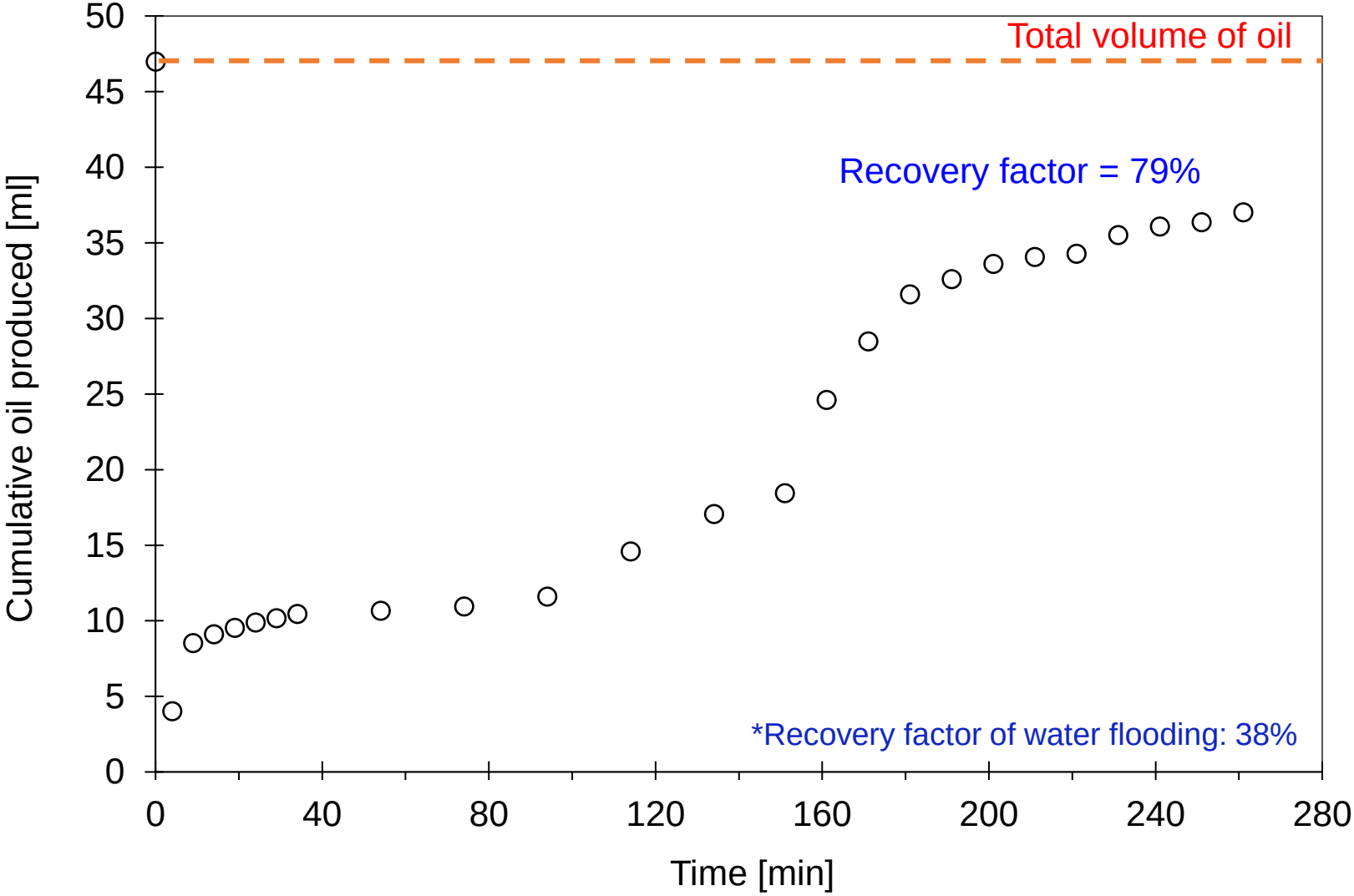
Test Sequence

Temperature-pressure path



- Fill the cell with silica sand
  - Pore volume → 47 mL
  - Porosity of the sand column 40%
- Saturated with mineral oil (red colored)
- Fill the intermediate cell with liquid CO_2
- Water bath→ 60 °C
- CO_2 flooding at constant pressure

Small Cell: CO_2 flooding results




THANK
YOU
GRACIAS
ARIGATO
SHUKURIA
DANKSCHEEN
BÏYAN
SHUKRIA
TINGKI
YAQHANYELAY
TASHAKKUR ATU
SUKSAMA
EKHMET
MEHRBANI
GRAZIE
MAAKE
KOMAPSUMNIDA
PALDIES
GOZAIMASHITA
EFCHARISTO
JUSPAXAR
BOLZÏN
MERCI