**Data Dictionary for a manuscript with a title of “Pore connectivity influences mass transport in natural rocks: Pore structure, gas diffusion and batch sorption studies”**

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**File: Supplementary Data-Yuan.xlsx**

1. ***Sheet “XRD data table”***

This sheet includes a table about mineral composition and clay-minerals contents for six rock samples (Grimsel granodiorite, Edwards limestone, two Israel chalk samples, Japan mudstone, and Wyoming dolostone).

1. ***Sheet “Grain size distri data”***

This sheet presents the original data of grain size distribution measurements of six rock samples.

1. ***Sheet “Grain size distri curve”***

This sheet includes the results of grain size distribution curves for six rock samples.

1. ***Sheet “Grain size distri table”***

This sheet includes the cumulative percentages for specifical particle diameters (e.g., d25, d50, d75, and d95) and uniformity parameters (Cu and Cc) calculated from grain size distribution measurements for six rock samples.

1. ***Sheet “MIP data”***

This sheet covers the intrusion pressure (MPa) and associated cumulative intrusion (μL/g; mm3/g) data collected from MIP tests for five samples (MIP data for Dolostone sample is not available).

1. ***Sheet “MIP curve”***

This sheet is about the mercury intrusion (solid symbols) and extrusion (open symbols) curves for five rock samples.

1. ***Sheet “Fractal dimension table”***

This sheet includes a table about fractal dimensions of pore throat structure obtained from MIP tests.

1. ***Sheet “Crushed rocks porosity table”***

This sheet is for a table regarding the crushed porosity for six rock samples with six different granular sizes.

1. ***Sheet “Intra-particle diffusivity”***

A summary of intra-particle diffusion coefficient (m2/s) and its contribution to the total diffusion for six rock samples.

1. ***Sheet “Batch sorption”***

This sheet contains a summary of the average and standard deviation for adsorption coefficient (mL/g) of tracers used in the batch sorption work.