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# Practical Tera-scale 3D Super Resolution Approaching a 1-micron Resolved 1-inch Core Plug

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The trade-off between the field of view (FOV) and resolution of micro-computed tomography (micro-CT) is a hardware bottleneck limits capturing both heterogeneity and micro-structure detail. Efficient super resolution methods combine the upper limits of both FOV and voxel resolution, while efficient modelling permits analysis of the large domain. A low resolution image of a 1-inch sandstone core plug and an unregistered high resolution (1-micron) sample trains an efficient and world-first 3D un-paired super resolution convolutional neural network, Dual-CycleSR. The resulting 25,000 x 25,000 x 50,000 domain provides unprecedented geometric fidelity over a full-sized core plug and reveals spatial heterogeneity that is captured by pore-to-core upscaling, with which forward-modelling produces a close match with unsteady-state core flooding production curves.

## Participation

In-Person

## References

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## Energy Transition Focused Abstracts

**Primary authors:** WANG, Ying Da (UNSW); TANG, Kunning (UNSW); ARMSTRONG, Ryan; MOSTAGHIMI, Peyman

**Presenter:** WANG, Ying Da (UNSW)

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