

# 深地科学论坛（第六十二讲）：Self-sealing of claystone: Application to High-level & Long-lived Nuclear Waste Disposal

时间：2023年9月4日 10:00:11:00

地点：411 会议室（腾讯会议：325-463-760）



报告人	报告人单位	报告题目
王传睿	CNRS-LaMcube- UMR9013 (法国研究中心力学、多物理场、多尺度实验室)	Self-sealing of claystone: Application to High-level & Long-lived Nuclear Waste Disposal (黏土岩的自密封：在高放射性和长寿命核废料处置中的应用)

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力学与土木工程学院

2023. 08. 31



## 报告人简介:

王传睿, 法国研究中心力学、多物理场、多尺度实验室 (LaM<sup>cube</sup> CNRS UMR9013) 博士后, 2021 年获得法国里尔中央理工大学校土木工程博士。主要研究方向包括多孔介质渗流, 多孔介质力学及其在高放射性废料地质埋存中的基础理论和应用研究。目前在 *Engineering Geology*, *Rock Mechanics and Rock Engineering* 等期刊发表论文 6 篇, 授权中国发明专利 1 项。曾多次在国际会议和科研机构做主题报告, 包括欧洲土木工程协会、法国核废料处理局等。

## 报告摘要:

### **Self-sealing of claystone: Application to High-level & Long-lived Nuclear Waste Disposal**

Self-sealing is a well-known property of claystone. In the context of geological disposal of nuclear waste, understanding the self-sealing mechanism and its efficiency is crucial for the repository safety assessment. The self-sealing process involves different physical mechanisms such as re-compaction, water-clay interactions, and fracture geometry, it is critical to investigate these individual physical mechanisms and their coupled effects. In this talk, we shall take the French Callovo-Oxfordian (COx) claystone as an example and discuss how self-sealing behavior can be quantified via different laboratory measurements. In particular, we shall introduce an innovative device dedicated to the measurements of water and gas transport in the re-sealed COx claystone. Two properties, water permeability and gas breakthrough pressure, are used as self-sealing indicators. Finally, we shall slightly extend the discussion on the crack geometry change due to self-sealing.