

轻非水相液体污染过程的高密度电阻率成像法室内监测

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摘要 为探讨高密度电阻率成像法监测多孔介质中轻非水相液体迁移过程的有效性, 本文通过三维砂槽进行了非饱和和带中轻非水相液体的污染试验, 并利用高密度电阻率成像法进行了同步的动态监测. 试验之后, 将砂槽层层挖开, 通过数码成像, 获取了污染区域的实际范围与形状. 结果表明, 由高密度电阻率成像法圈定的污染区域在范围与形状上都与实际的结果比较接近, 并可通过三维电阻率相对值的时间变化明显的看出轻非水相液体的污染过程. 这说明利用高密度电阻率成像法对非饱和和多孔介质中轻非水相液体的空间分布范围进行圈定并监测其迁移过程是完全可行的.

关键词 [多孔介质](#) [轻非水相液体](#) [污染过程](#) [高密度电阻率成像法](#)

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Laboratorial monitoring of the LNAPL contamination process using electrical resistivity tomography

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Abstract In order to investigate the effectiveness of ERT in monitoring LNAPL migration and delineating its spatial distribution in unsaturated porous media, a LNAPL contaminant experiment was made with a sand box and ERT measurement was conducted to monitor the LNAPL contamination process. After the contamination test, the sand was excavated layer by layer and digital pictures were recorded. The results show that the spatial range and shape of the contaminated area obtained from the ERT coincide with that recorded very well, and the contamination process of LNAPL is clearly reflected from the temporal variations of the 3-D resistivity relative variation rate. This means that it is possible to use the ERT to monitor the LNAPL migration and delineate its spatial distribution in the unsaturated porous media.

Key words [Porous medium](#); [LNAPL](#); [Contaminating process](#); [Electrical resistivity tomography](#)

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