

# Two-Dimensional Mapping of Arsenic Concentration and Speciation with Diffusive Equilibrium in Thin-Film Gels

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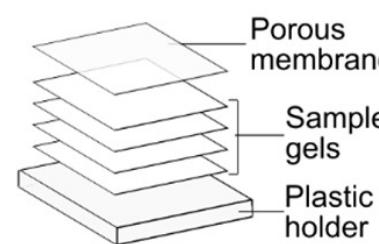
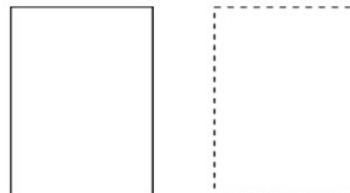
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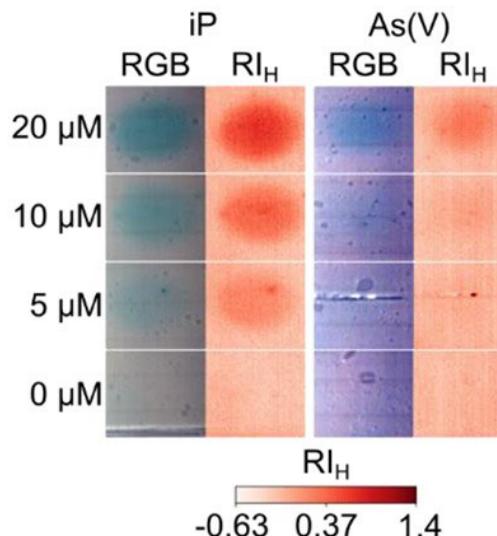
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**A)** "Sample" gel made from polyacrylamide    **B)** "Reagent" gel made from agarose

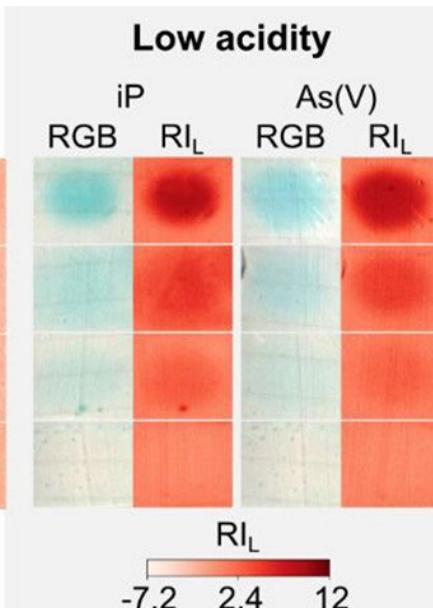


**A)**

High acidity



Low acidity



**A)**

As(V) ( $\mu\text{M}$ )

As(III) ( $\mu\text{M}$ )

iP ( $\mu\text{M}$ )

Fe<sub>Tot</sub> ( $\mu\text{M}$ )

Depth (cm)

Width (cm)

**B)**

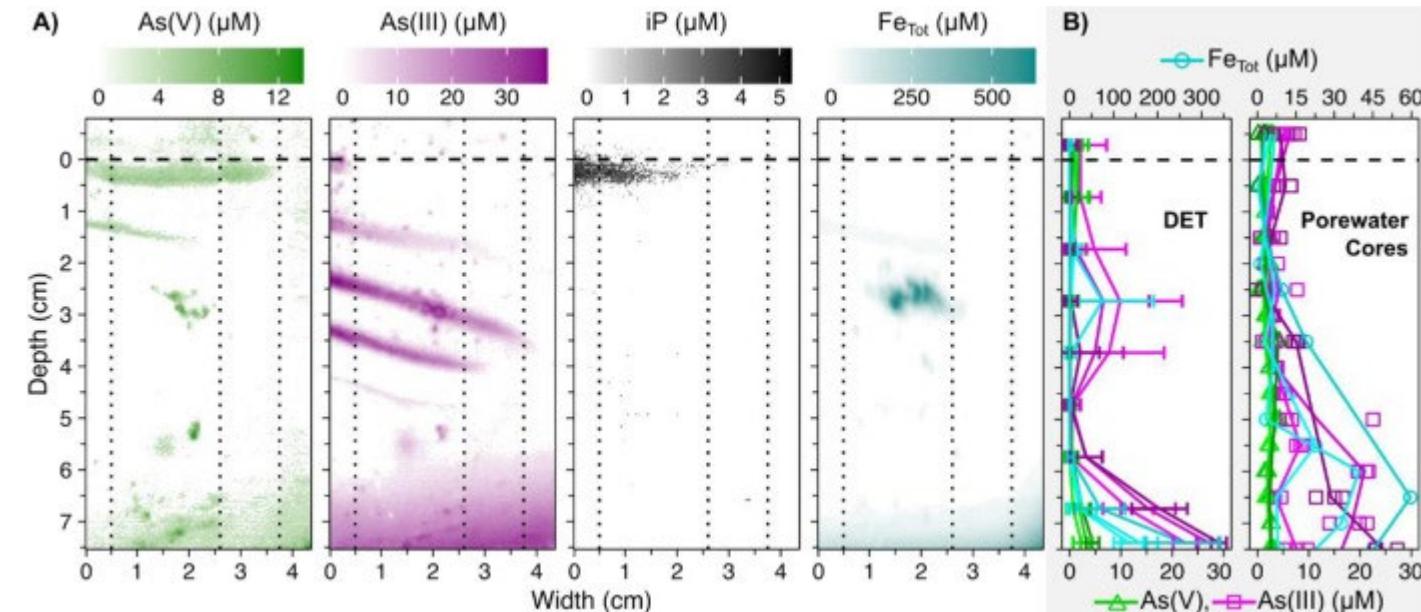
Fe<sub>Tot</sub> ( $\mu\text{M}$ )

DET

Porewater Cores

As(V) ( $\mu\text{M}$ )

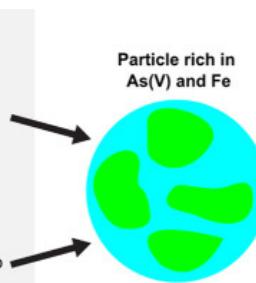
As(III) ( $\mu\text{M}$ )



natural soil from the Bossegraben brook in the Harz mountains, Germany

**Input into system**

1. Particle originating from contaminated depot transported through Bossegraben, buried in soil.
2. High As(V) in porewater, before mitigation, sorbed onto iron particles previously present in soil.



**Current redox cycling**

Reductive dissolution: Reduction of solid-phase iron leads to release of dissolved As(V) and Fe(II)

$\text{Fe}(\text{II}) + \text{HAsO}_4^{2-} \rightarrow \text{H}_3\text{AsO}_3$

Eventual reduction of As(V) to As(III) with increasing distance to solid Fe particle