

# SEG 100 Conference: Celebrating a Century of Discovery

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## **Seismic Detection of Permeability and What It Could Mean for Exploration**

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In the spirit of 2021 and beyond, this talk addresses how new methods of seismic permeability mapping could aid ore deposit exploration. Ore deposits are related to fluid flow, and flow is controlled by permeability. The patterns of permeability that produced an ore deposit in a specific location likely remain long after the deposit formed. New methods for detecting the microslip events and very low amplitude harmonic resonances (humming) on fluid-filled fractures that appear to be related to present-day permeability could therefore be relevant to exploration. How seismic monitoring can map subsurface permeability, how and why it is thought that permeability is related to seismic “noise” that is detected in data today, and illustrative applications of seismic permeability mapping to exploration will be described.