



INVITATION

for a

VERA - SEMINAR

with

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**Noble gases: a versatile exploration tool for water,
minerals, and hydrocarbons**

Noble gases exist mainly as stable and some radioactive isotopes and are amongst the most versatile exploration tools for fluids in the geosphere. Popular applications across nearly all areas involving fluid movement include: groundwater and its recharge conditions, connectivity between aquifers, and its flow velocity; ocean water circulation, water mass characterization and mixing; hydrocarbon evolution, its phase transitions and exchange with formation water; migration of crustal solutions and their precipitation processes as preserved in mineral fluid inclusions. Compared to other tracer systems, such as radiocarbon (^{14}C), radiochlorine (^{36}Cl) or anthropogenic substances such as the CFCs, they are not influenced by chemical reactions and only reflect physical processes such as advective transport, diffusion, mixing and phase transitions.

This talk gives an overview about the measurement technology of noble gas and noble gas isotopes in water, rock and hydrocarbon samples at the noble gas facility at CSIRO Australia and also delves into a few field studies, where noble gases were combined with other tracers in Australia.

Friday, 07. July 2023, 14:30 o'clock

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1. Stock, Victor-Franz-Hess Hörsaal**

R. Golser

S. Merchel

W. Kutschera