

# 15th International Conference on Muon Spin Rotation, Relaxation and Resonance



Contribution ID: 325

Type: Oral

## Opportunities and challenges of molecular spins in quantum nanoscience

*Tuesday, 30 August 2022 09:00 (40 minutes)*

Implementation of advanced Quantum Technologies might benefit from the remarkable quantum properties shown by molecular spin systems based on the coordination bond. The versatility of the molecular approach combined with rational design has recently boosted the operativity temperature of molecules acting as bits of memory, otherwise known as Single-Molecule Magnets, or the coherence time of molecular spin qubits. The richness and tunability of the spectrum of spin levels make them particularly suitable for quantum error correction, while spin-spin interaction can be tuned to realize quantum gates and quantum simulators. Molecules can also be processed to be deposited on surfaces, allowing the realization of hybrid nanostructures. However, achieving the control of single molecules is also challenging, requiring to couple the electric field, which can be confined at the molecular scale, with the spin degrees of freedom of the molecule. Investigation of the spin dynamics at the level of the monolayer requires developing innovative tools and muon spin resonance might be an important resource.

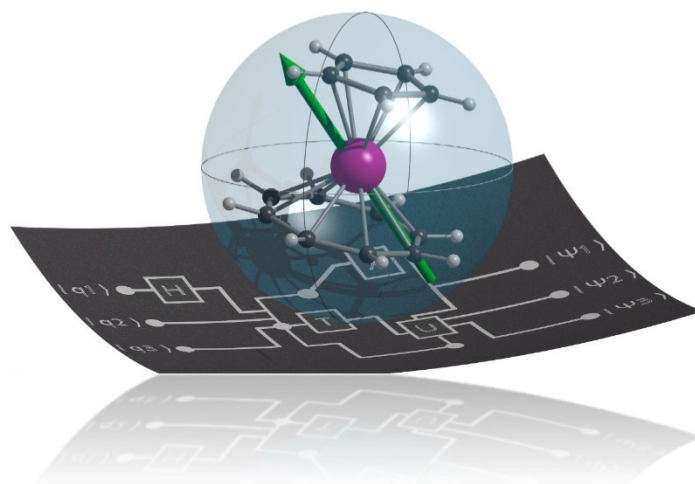


Figure 1:

**Primary author:** SESSOLI, Roberta

**Presenter:** SESSOLI, Roberta

**Session Classification:** Invited Talks

**Track Classification:** Spin liquids and related phenomena