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Methodology	We fabricated nanodomains of the 2D metal–organic framework $\left[\{\text{VO}(\text{TCPP})\}\text{Zn}_2(\text{H}_2\text{O})_2\right]$ at the air–water interface of either a Langmuir trough or in-situ on the surface of Nb superconducting coplanar resonators. The vanadyl spin phase-memory times were determined through pulsed-EPR using a Bruker Biospin ELEXSYS E 580 spectrometer operating in the X-band. Microwave transmission measurements were done using a programmable network analyser at 4.2 K by mounting the devices on a home-made probe and submerging them in liquid helium inside the bore of a 9 T x 1 T x 1 T superconducting vector magnet. The coupling of the vanadyl spins with the superconducting resonator G_N was determined using the field dependence of the photon decoherence rate and the expression for cases where the coupling G_N is much smaller than the decay rate Γ .
Data processing and software needed	
Access to the data	Contact Ainhoa Urtizberea at ainhoa@unizar.es or Olivier Roubeau at roubeau@unizar.es