# Quantum gas microscopy of correlated systems with new ingredients: kinetic frustration and dipolar interactions

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Quantum gas microscopy has revolutionized quantum simulation with ultracold atoms in optical lattices. So far, it has mostly been applied in the context of the "plain-vanilla" Hubbard model on the square lattice relevant to the high-temperature superconducting cuprates. In this talk, I will report on the microscopy of correlated systems with new ingredients. I will describe programmable optical lattices, focusing on the case of the triangular lattice which introduces spin and kinetic frustration. We observe a novel type of "high-temperature" magnetic polaron in this system, stabilized by kinetic frustration. Next, I will describe our development of a molecular quantum gas microscope that allowed us to study correlated systems with dipolar interactions. There, I will report on the study of the dynamical evolution of spin correlations in out-of-equilibrium dipolar quantum spin models. Finally, I will discuss prospects for exploring dipolar Hubbard models realized with molecules.