Abstract: Quantum computers are an emerging technology intended to address computational problems that are exponentially hard for classical computers. The electronic structure problem is one of such problems. One of the most practical approaches to engaging currently available universal-gate quantum computers to this problem is the variational quantum eigensolver (VQE) method. In this talk, I will discuss three recent improvements in the VQE framework my group accomplished:
1) introducing symmetry constraints,
2) devising efficient low-depth quantum circuits, and
3) improving projective measurement process.