Molecular-beam epitaxy (MBE) is renowned for preparing semiconductor heterostructures with high purity, high mobility, and exquisite control of layer thickness at the atomic-layer level. In recent decades it has become the definitive method for the preparation of oxide quantum materials as well. In this talk I will describe the use of MBE to tune the band structure of ruthenates. Ruthenates with perovskite and perovskite-related structures host a remarkably diverse class of exotic quantum phases ranging from spin-triplet superconductivity, ferromagnetism, metamagnetism, spin-density waves, antiferromagnetism, and quantum criticality all with–the same basic building block of corner-sharing RuO$_6$ octahedra containing Ru$^{4+}$ ions. Using thermodynamics we identify appropriate conditions for the growth of ruthenate films and then exploit strain engineering and dimensionality to tune the band structure and properties of SrRuO$_3$ and BaRuO$_3$ with the perovskite structure as well as their two-dimensional counterparts Sr$_2$RuO$_4$ and Ba$_2$RuO$_4$. The misfit strain is imposed by underlying substrates to strain these ruthenate thin films to percent levels. The band structure is revealed by high-resolution angle-resolved photoemission (ARPES) on pristine as-grown surfaces of these complex oxides made possible by a direct ultra-high vacuum connection between the MBE and ARPES. Our work demonstrates the possibilities for utilizing strain engineering as a disorder-free means to manipulate emergent properties and many-body interactions in correlated materials.