Molecular Plasmonics is an emerging field of scientific investigation which is at the intersection of photonics, chemistry, and nanotechnology. In this presentation we discuss the use of surface plasmon resonance in the study of molecular interactions in particular biologic molecular interactions that can be detected and measured on silicon chips. The chips have been coated with molecular nanolayers and subsequently patterned with standard photolithographic techniques to create micro biologic reactors on the surface. In this paper we discuss the use of scanning surface plasmon resonance for use in studying binding kinetics of small molecules to proteins that have been expressed and captured on the surface. The new technology has broad application in the use of drug discovery, drug toxicity testing and eventually low cost diagnostics.