Single molecule fluorescence microscopy is a recent technique that has been developed to aid in the real-time, *in vivo* imaging and monitoring of nanometer-scale features. These capabilities make it a powerful technique for imaging molecular-scale rearrangements. It has been used to determine the walking pattern of Myosin V\(^1\), to detect conformational changes in proteins\(^2\), elucidate the mechanism of protein folding within a chaperonin molecule\(^3\), and study the kinetics of gold nanoparticle-catalyzed reactions\(^4,5\). Two main microscope systems, confocal and total internal reflectance fluorescence, in combination with super-resolution techniques\(^6\), have been able to bring the nano-scale world to the bench-top.


