A fractal analysis is presented for the binding and dissociation of different analytes on arrays/microarrays/DNA chips. The analysis of both the binding and the dissociation (wherever applicable) steps provides a more complete picture of the reaction occurring on the sensor chip surface, besides providing for values of the affinities wherever applicable. This is the ratio of the rate coefficients in the binding and in the dissociation steps. The fractal analysis provides values of the binding rate coefficeint, k and the degree of heterogeneity made quantitative by the fractal dimension, Df on the sensor chip surface. The fractal analysis is applied to (a) the binding and dissociation (hybridization) of different targets (400 nM) in solution to a probe immobilzed on a DNA chip surface (Fiche et al., 2007), (b) binding (hybridization) of different concentrations (in nM) of free-DNA in solution to a 22-mer strand (bound DNA) immobilized via a phenylene-diisocyanate linker molecule on a glass substrate (Michel et al 2007), (c) binding (hybridization) of SA-HRP (streptavidin-peroxide horseradish) in solution to a capture probe on a QCM (quartz crystal microbalance) electrode along with a detection probe (Feng et al., 2007), and (d) binding (hybridization) of a (i) a perfectly matched oligonucleotide (ODN-P) and (ii) a non-complementary ODN (ODN-N) to an electrochemical sensor with a EST2-A34 reporter (Wang et al., 2007). Both single- and dual-fractal analysis are used to adequately model the binding and the dissociation kinetics. The dual-fractal analysis is used only when the single-fractal analysis did not provide an adequate fit (sum of least squares less than 0.97. This was done by the regression analysis provided by Corel Quattro Pro 8.0. The fractal analysis permits a link between the binding rate coefficeint, k and the degree of heterogeneity that exists on the sensor surface. This provides a more complete picture of the reaction kinetics occurring on the sensor chip surface.