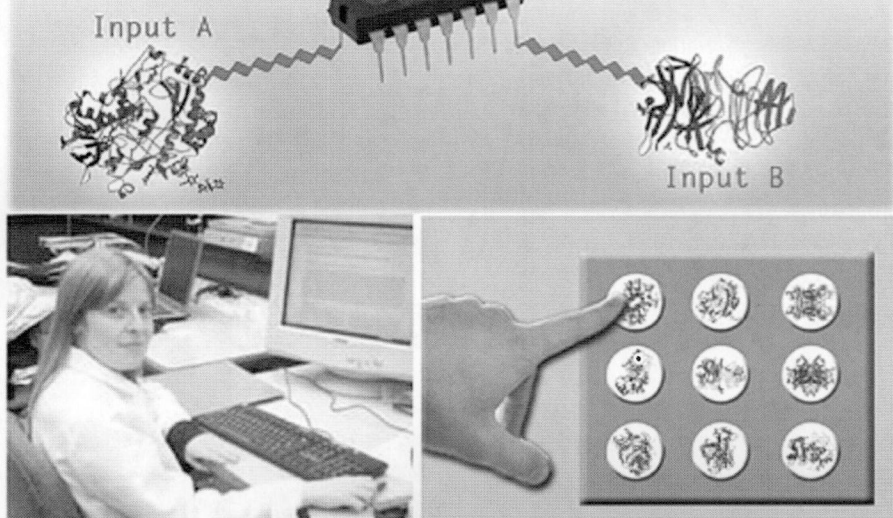


## biocomputing enzymes as inputs



**The picture shows:** (i) the biocomputing concept where enzymes operate as input signals activating logic operations mimicking electronic logic gates, (ii) a graduate student - Guinevere Strack working on the biocomputing project and (iii) the cartoon illustrating the biomolecular keypad lock security system.

### Professor Evgeny Katz Initiates Novel Biocomputing Project

A novel research direction related to mimicking computing operations by using biomolecular systems was recently initiated by Professor Evgeny Katz (the Milton Kerker Chaired Professor in Colloid Science at Clarkson University) and his group. Biomolecular systems based on natural enzymes can perform logic operations mimicking electronic logic gates. Individual enzyme-based logic gates were assembled and scaled up to biomolecular computing network systems performing various logic operations, such as mimicking a keypad lock security system. See picture. The biomolecular logic gates were associated with electronic transducers, and input signals of a different physical and chemical nature were applied to activate them. This research direction has been recognized by the NSF as a Grand Challenge for future studies during the next ten to fifteen years. The biocomputing research being carried out at Clarkson is currently supported by two NSF-sponsored grants. This multidisciplinary research in biocomputing includes the collaborative efforts of several groups led by Professors Katz, Minko and Privman. Results of this work have already been published in high ranking journals, such as *Journal of the American Chemical Society*, *ChemBioChem* and *Electroanalysis*.