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Polymer adsorption

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The aim of this talk is to review Pierre-Gilles deGennes' work on polymer adsorption and the impact that it has now in our understanding of this problem. We will first present the self-consistent mean-field theory and its applications to adsorption and depletion. De Gennes most important contribution is probably the derivation of the self-similar power law density profile for adsorbed polymer layers that we will present next, emphasizing the differences between the tail sections and the loop sections of the adsorbed polymers. We will then discuss the kinetics of polymer adsorption and the penetration of a new polymer chain in an adsobed layer that DeGennes described very elegantly in analogy with a quantum tunneling problem. Finally, we will discuss the role of polymer adsorption for colloid stabilization.