## Variable Charge Reactive Empirical Potentials

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Simplified from the quantum theories, the reactive interatomic potentials with charge transfer are developed to provide a faster method to empirically describe the force fields in a physically realistic manner. The recent developments within the variable charge many-body empirical potential are reviewed. The origin of and the physical behind each potential energy are also discussed. The capabilities of this type of potentials are illustrated by examples including deposition of organic molecules on metal surfaces and chemisorption of graphene on metal oxide surface.