

$$V_{crf} = fq_iq_j \left[\frac{1}{r_{ij}} + k_{rf}r_{ij}^2 - c_{rf} \right] \quad (1)$$

$$V_{crf} = V_c + V_{rf} \quad (2)$$

$$V_{rf} = fq_iq_j(k_{rf}r_{ij}^2 - c_{rf}) \quad (3)$$