

**Figure 9.7.** The initial reaction rate of a catalyzed reaction versus the concentration of the substrate  $[X]$  (Eq. (9.39), where  $K_1 = k_{-1}/k_1$ ). The catalytic reaction could be homogeneous, heterogeneous or enzyme catalysis so long as it follows the simple catalytic mechanism. The substrate concentration,  $[X]$ , at a rate of half the maximum reaction rate,  $V_M/2$ , defines  $K_M$  in Michaelis–Menten enzyme kinetics.

