The Waring rank of an homogeneous degree \( d \) polynomial \( F(x_1, \ldots, x_n) \) is the minimal \( s \) such that we can write

\[
F = L_1^d + \ldots + L_s^d,
\]

where the \( L_i \) are linear forms. As a matter of fact, there is no effective algorithm to compute the Waring rank, \( \text{rk}(F) \), of a given polynomial. Thus we will show the few cases in which \( \text{rk}(F) \) is explicitly known. Namely, if \( F \) is a degree two form (classically known) or if \( F \) is a monomial or a sum of coprime monomials. This is based on joint work with M.V.Catalisano and A.V.Geramita.