We consider multivariate approximation for smooth classes of d variate functions. Let $n(\epsilon, d)$ denote the minimal number of linear functionals that is necessary for solving the d variate approximation problem to within ϵ. Typically, $n(\epsilon, d)$ goes to infinity as ϵ goes to zero but the speed of convergence of $n(\epsilon, d)$ decreases with the increased smoothness of functions. For example, for infinitely differentiable functions, for any positive r we have $n(\epsilon, d) = o(\epsilon^{-r})$.

Tractability means that $n(\epsilon, d)$ does *not* depend exponentially on d. Does large or infinite smoothness imply tractability? This is the question we address in our talk. It turns out that the answer depends on the norm of the target space and in many cases is negative. That is, we have the *curse of dimensionality even for infinite smoothness* since $n(\epsilon, d)$ depends exponentially on d. The talk is based on joint work with Erich Novak.