ABSTRACT

This disclosure relates to a method for chemically modifying metal oxide particles, including a) adjusting the pH of a liquid dispersion of metal oxide particles to a pH value where the zeta potential of the metal oxide particles is from at least about -20 mV to at most about 20 mV; and b) adding a quaternary silane to the liquid dispersion of metal oxide particles to form chemically modified metal oxide particles. This disclosure further relates to polishing compositions including the chemically modified metal oxide particles, and methods of polishing semiconductor substrates using the polishing compositions.