Silicon is by far the most important material used in microelectronics, partly due to the excellent electronic properties of its native oxide (SiO₂). Anyway, substitute semiconductors are constantly matter of research. SiC is one of the most promising candidates, also because of the formation of SiO₂ as native oxide. Anyway, the SiO₂/SiC interface has very poor electrical properties due to a very high density of interface states which reduce its functionality in MIS devices. We have studied the electronic properties of defects in the SiO₂/Si and SiO₂/SiC interfaces by means of XAS, XPS and resonant photoemission at the O 1s edge, using native SiO₂ thermally grown with thicknesses below 10nm. Our XAS data are in perfect agreement with literature, in addition resonant photoemission reveals the resonant contributions of the individual valence states. For these, we find differences which we discuss.