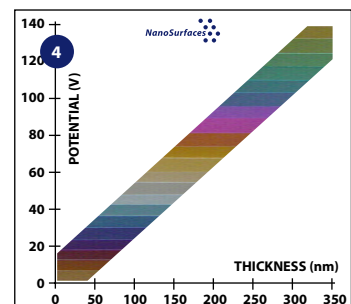
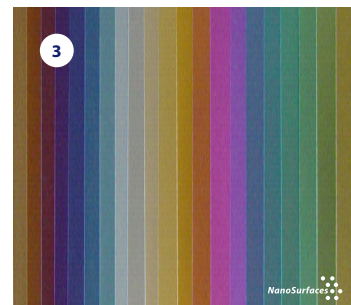
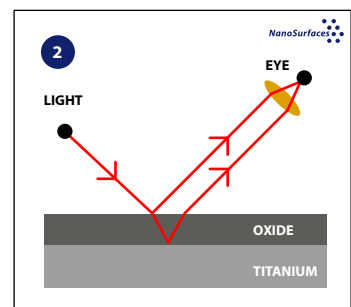
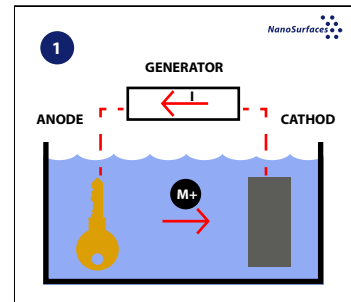


Anodic oxidation treatments applied on titanium and its alloys to increase the thickness of the oxide film

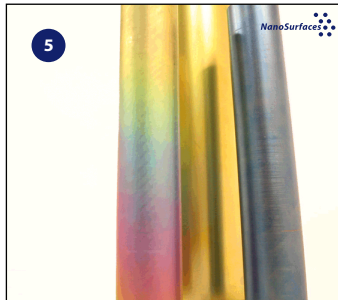
Titanium owes its corrosion resistance to the presence of a protective titanium oxide film, a few nanometres thick, whose thickness, chemical composition and crystal structure can be modified so as to obtain peculiar properties.

The electrochemical technique named anodic oxidation, or **anodizing** (1), allows to increase the thickness of the oxide layer from few nanometres to hundreds of nanometres, which also enhances the resistance of titanium itself to corrosion and atmospheric agents.

By increasing the film thickness, optical interference phenomena arising from light diffraction at the metal-oxide interface (2) establish, causing the generation of **interference colors** (3) on titanium whose hue depend on the oxide thickness, which in turn is determined by the **anodizing feeding voltage** (4).



Since the oxide thickness is not affected by the exposure to “natural” environments, the obtained interference colours are stable in time (5).



This treatment, which was firstly developed by Professor Pietro Pedferri to produce **artworks** (not reproducible unique works) (6-9), was also exploited to revisit some **design** objects (10-12) (Rexite © pencilholder).

