

ABSTRACT

OXIDATION STATE SENSORS AND METHODS FOR TRANSITION METAL ALLOYS

5 The present invention is concerned with a method of discriminating between, in a
surface of a transition metal alloy, transition metals in different oxidation states using
surface sensor molecules adapted to associate selectively with one of the transition
10 in aircraft components such as turbine blades, engine casings and aerofoils. In
embodiments, a surface sensor molecule comprising an oxidation state discriminating
group, such as an imidazole, and a fluorescein probe is applied in aqueous solution to
the surface of a service-run Ni alloy aircraft component. The sensor molecule selectively
15 associates with transition metals in oxidation states greater than zero such that
fluorescence imaging can be used to identify areas of degradation.

Fig 1A