

Scientific Paper:

Adv. Material 11, No. 15, 1999

Luminescence Lifetime Temperature Sensing Based on Sol-Gels and Poly(acrylonitrile)s Dyed with Ruthenium Metal-Ligand Complexes

Gregor Liebsch, Ingo Klimant and Otto S. Wolfbeis
Institute of Analytical Chemistry, Chemo- & Biosensors, University of Regensburg,
D-93040 Regensburg (Germany)

Abstract:

Temperature-sensitive materials based on the temperature probe ruthenium-tris-1,10-phenanthroline (Ru(phen)) are presented. As its luminescence, the intensity and decay time of which are both temperature sensitive, is quenched by oxygen, Ru(phen) needs to be encapsulated in materials with very low permeability to molecular oxygen. Its incorporation into sol-gels and poly(acrylonitrile)s (PANs) is investigated here and it is shown that the resulting materials can be deposited onto optical fibers for use as temperature optodes.