bone cement and said fluorophore after said step of attaching comprises 4-(N-methacryloyloxymethyl-N-methylamino)-4'-nitrostilbene.

4. The method according to claim **1** wherein said fluorophore comprises a substituted linear alkene having an electron accepting group and an electron donating group, said electron accepting group being selected from the group consisting of 4-pyridinium alkylsulfonate, para-substituted phenyl, 1-naphthyl substituted at the 5-position and 2-naphthyl substituted at the 6-position, said electron donating group being selected from the group consisting of 4-(N,N-dialkylanilino), 6-[2-(N,N-dialkylamino)naphthyl] and 1-[5-(N,N-dialkylamino)naphthyl].

5. The method according to claim **4** wherein said fluorophore is selected from the group consisting of: 4-(N,N-dimethylamino)-4'-nitrostilbene, 6-[2-(N,N-dibutylamino)naphthyl]ethenyl-4'-pyridinium propylsulfonate, 4-(N,N-dibutylanilino)hexatrienyl-4'-pyridinium butylsulfonate, 4-(N,N-dibutylanilino)butadienyl-4'-pyridinium butylsulfonate, and 4-(p-dihexylaminostryryl)pyridinium propylsulfonate.

6. A method of measuring extent of solidification of a thermoplastic polymer comprising the steps of:

dissolving a fluorophore in a thermoplastic polymer;

measuring change in peak fluorescence wavelength of said fluorophore resulting from a change in polarity and mobility of the thermoplastic polymer surrounding said fluorophore; and

comparing said change with a known value to determine extent of solidification of said thermoplastic polymer.

7. The method according to claim **1** wherein said fluorophore comprises a substituted linear alkene having an electron accepting group and an electron donating group, said electron accepting group being selected from the group consisting of 4-pyridinium alkylsulfonate, para-substituted phenyl, 1-naphthyl substituted at the 5-position and 2-naphthyl substituted at the 6-position, said electron donating group being selected from the group consisting of 4-(N,N-dialkylanilino), 6-[2-(N,N-dialkylamino)naphthyl] and 1-[5-(N,N-dialkylamino)naphthyl].

8. The method according to claim **7** wherein said fluorophore is selected from the group consisting of: 4-(N,N-dimethylamino)-4'-nitrostilbene, 6-[2-(N,N-dibutylamino)naphthyl]ethenyl-4'-pyridinium propylsulfonate, 4-(N,N-dibutylanilino)hexatrienyl-4'-pyridinium butylsulfonate, 4-(N,N-dibutylanilino)butadienyl-4'-pyridinium butylsulfonate, and 4-(p-dihexylaminostryryl)pyridinium propylsulfonate.

9. A device for monitoring degree of cure of a polymerizing material or extent of solidification of a thermoplastic polymer comprising:

a light source for producing excitation light;

an optical fiber probe for carrying the excitation light from the light source to fluorophore molecules immobilized on a surface of said optical fiber probe; and

means for detecting and measuring peak fluorescence wavelength of said immobilized fluorophore molecules when said optical fiber probe is contacted with a polymerizing material or a thermoplastic polymer.

10. The device according to claim **9** wherein said optical fiber probe generates evanescent-wave excitation.

11. The device according to claim **9** wherein said fluorophore is immobilized by covalent bonding.

12. The device according to claim **9** wherein said fluorophore is immobilized by physical adsorption.

13. A method of monitoring degree of cure of a polymerizing material or degree of solidification of a thermoplastic polymer comprising:

contacting an optical fiber probe having immobilized fluorophore molecules thereon with a polymerizing material or a thermoplastic polymer;

producing excitation light by means of a light source;

carrying the excitation light from the light source to said immobilized fluorophore molecules by means of said optical fiber probe; and

measuring peak fluorescence wavelength of said immobilized fluorophore molecules.

14. The method according to claim **13** further comprising the step of immobilizing said fluorophore molecules on said optical fiber probe by physically adsorbing said fluorophore on said optical fiber probe.

15. The method according to claim **13** further comprising the step of covalently bonding said fluorophore molecules on said optical fiber probe before said step of contacting.

16. The method according to claim **15** wherein said step of covalently bonding comprises modifying a surface of the optical fiber probe by reaction with omega-isocyanatoalkyltriethoxysilane, immobilizing a fluorophore on said modified surface, and coating said modified surface with a layer of said polymerizing material or thermoplastic polymer.

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