(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :16/01/2023

(21) Application No.202341003191 A
(43) Publication Date : 20/01/2023

(54) Title of the invention : SYNTHESIS OF CHARGE TRANSFER HYBRID NANOTiO2 - PHENANTHROIMIDAZOLE MATERIAL

(51) International classification	:C07D0235020000, C09K0011060000, B82Y0030000000, C01G0023053000, C09B0055000000
(86) International Application No Filing Date	:PCT// :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)**Name of Applicant :**
1)Annamalai University
Address of Applicant :Annamalai Nagar, Chidambaram ---------- ----------
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Jayabharathi Jayaraman
Address of Applicant :Department of Chemistry, Annamalai University , Annamalai Nagar Chidambaram Chidambaram ---------- ----------
2)Thanikachalam Venugopal
Address of Applicant :Department of Chemistry, Annamalai University Annamalai Nagar Chidambaram - 608002 Chidambaram ---------- ----------
3)Karthikeyan Balakrishnan
Address of Applicant :Department of Chemistry, Annamalai University Annamalai Nagar Chidambaram - 608002 Chidambaram ---------- ----------
4)Sivagurunathan Paramasivam
Address of Applicant :Department of Microbiology, Annamalai University Annamalai Nagar, Chidambaram - 608002 Chidambaram ---------- ----------

(57) Abstract :
ABSTRACT Synthesis of charge transfer hybrid nano TiO2 - phenanthroimidazole material comprises charge transfer interaction of bioactive 2-(4-methoxynaphthalen-1-yl)-1-phenyl-1H- phenanthro[9,10-d]imidazole (MPPI) with rutile and anatase phases of TiO2 nanomaterials in MPPI-TiO2 composites. The electronic and optical properties of the obtained novel fluorophore, 2-(4-methoxynaphthalen-1-yl)-1-phenyl-1H-phenanthro[9,10-d]imidazole (MPPI) have been analysed. Addition of TiO2 (A) to MPPI results in quenching whereas addition of TiO2 (R) to MPPI leads to emission enhancement. The MPPI adsorbs strongly on anatase and rutile phases of TiO2 surface due to chemical affinity of azomethine nitrogen of MPPI and MPPI preferably binds to Ti atom of TiO2 clusters through azomethine nitrogen atom (N-Ti). The MPPI-TiO2(R) composite and MPPI-TiO2 (A) composite formation have been confirmed by SEM, EDX, TEM and theoretical studies.

No. of Pages : 16 No. of Claims : 7