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(71)**Name of Applicant :**
1)Dr P KALUGASALAM
Address of Applicant :Anna University Regional Campus Coimbatore Navavoor Vadavalli ---------- ----------
2)Dr. T JAYAPRAKASH
3)Dr N SATHIYAPRIYA
4)Dr. K. SIVAKUMAR
5)Dr. N KRISHNAMOORTHY
6)Dr. K. KULATHURAAN
7)Mrs. GULJA S NAIR
8)Mrs D THARANI
9)Dr RAJASEKARAN SAMINATHAN
10)Dr M KUMARESAN
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr P KALUGASALAM
Address of Applicant :Anna University Regional Campus Coimbatore Navavoor Vadavalli ---------- ----------
2)Dr. T JAYAPRAKASH
Address of Applicant :Professor in Physics, Department of Science and Humanities, Nehru Institute of Technology, Kaliyapuram, Coimbatore – 641 105. ---------- ----------
3)Dr N SATHIYAPRIYA
Address of Applicant :Assistant Professor (SG) in Physics Nehru Institute of Engineering and Technology, Coimbatore – 105 ---------- ----------
4)Dr. K. SIVAKUMAR
Address of Applicant :Professor/Physics Department of Science and Humanities Hindusthan College of Engineering & Technology(Autonomous) Coimbatore - 32 ---------- ----------
5)Dr. N KRISHNAMOORTHY
Address of Applicant :Associate Professor of Physics Sri Eshwar College of Engineering, KINATHUKADAVU, Coimbatore- 641 202 ---------- ----------
6)Dr. K. KULATHURAAN
Address of Applicant :Assistant Professor, Department of Physics. ArulmiguPalaniandavar College of Arts and Culture, Dindigul Road, Palani - 624601, Tamil Nadu. ---------- ----------
7)Mrs. GULJA S NAIR
Address of Applicant :Assistant Professor (SG) in Agriculture Engineering, Nehru Institute of Technology, Kaliyapuram, Coimbatore – 641 105 ---------- ----------
8)Mrs D THARANI
Address of Applicant :Assistant Professor (SG) in Chemistry Nehru institute of Engineering and Technology, Coimbatore – 105 ---------- ----------
9)Dr RAJASEKARAN SAMINATHAN
Address of Applicant :Professor Department of Mechanical Engineering, Jazan University, Saudi Arabia ---------- ----------
10)Dr M KUMARESAN
Address of Applicant :Professor in Chemistry, Department of Science and Humanities, Nehru Institute of Technology, Kaliyapuram, Coimbatore – 641 105. ---------- ----------

(57) Abstract :
Because of its unique structural and electrical properties, Lead Phthalocyanine (PbPc) has received some attention in Phthalocyanine research. PbPc is a desirable material for a variety of device applications, including optoelectronics, gas sensors, organic light emitting devices (OLEDs), field effect transistors (FETs), and so on. On a glass substrate, the films were 150 nm, 300 nm, and 450 nm thick, and on a potassium chloride (KCl) substrate, they were 150 nm thick. The film is annealed at temperatures of 323 K and 373 K to a thickness of 450 nm. The patterns at lower thickness (150 nm) reveal peaks at 2 values 6.85o, 14.16o, and 24.55o, which were ascribed to monoclinic (001), (320), and (111) lines, respectively, according to the X-ray diffraction results.The film thickness of 450 nm is annealed at temperatures of 323 K and 373 K. Peaks at 2 values of 14.9o, 22.4o, and 30.3o are attributed to the triclinic (200), (300), and (400) lines, respectively, when annealed at 323 K. The EDAX approach was used to analysePbPc films formed at various thicknesses, substrates, and annealing temperatures. In both circumstances, the percentage of lead is the same, and the amount is quite small (1.35%). When annealed at a high temperature, the proportion of carbon increases from 65.56 percent to 84.81 percent. FT-IR was used to determine the elemental composition of PbPc films formed at various thicknesses and annealed temperatures. The intensity of the C-C and C-H benzene ring peaks increases with thickness and temperature.

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(71)**Name of Applicant :**
1)Dr.BIRENDRA KUMAR CHAUHAN
Address of Applicant :PROFESSOR DEPARTMENT OF MATHEMATICS DR KN MODI INSTITUTE OF ENGINEERING AND TECHNOLOGY, MODINAGAR, GHAZIABAD, UTTAR PRADESH – 201204 MODINAGAR ---------- ----------
2)Dr LOKESH CHAUDHARY
3)Dr. K. JOTHIMANI
4)Dr. N. VALLIAMMAL
5)Dr.N.VITHYA
6)Ms. T. CHANDRAPUSHPAM
7)Dr. K KANNAN
8)Mrs. K. ANITHA
9)Mrs. B.SUJATHA
10)Dr VINOTHINI V R
11)Mrs L. VADIVUKARASI
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr.BIRENDRA KUMAR CHAUHAN
Address of Applicant :PROFESSOR DEPARTMENT OF MATHEMATICS DR KN MODI INSTITUTE OF ENGINEERING AND TECHNOLOGY, MODINAGAR, GHAZIABAD, UTTAR PRADESH – 201204 MODINAGAR ---------- ----------
2)Dr LOKESH CHAUDHARY
Address of Applicant :ASSISTANT PROFESSOR DEPARTMENT OF MATHEMATICS IIMT COLLEGE OF ENGINEERING, KNOWLEDGE PARK –III, GREATER NOIDA UTTAR PRADESH - 201306 GREATER NOIDA ---------- ----------
3)Dr. K. JOTHIMANI
Address of Applicant :ASSOCIATE PROFESSOR DEPARTMENT OF MATHEMATICS SRI ESHWAR COLLEGE OF ENGINEERING, KONDAMPATTI POST, KINATHUKADAVU, COIMBATORE-641202 TAMILNADU COIMBATORE ---------- ----------
4)Dr. N. VALLIAMMAL
Address of Applicant :ASSOCIATE PROFESSOR DEPARTMENT OF MATHEMATICS SRI ESHWAR COLLEGE OF ENGINEERING, KONDAMPATTI POST, KINATHUKADAVU, COIMBATORE-641202 TAMILNADU COIMBATORE ---------- ----------
5)Dr.N.VITHYA
Address of Applicant :ASSOCIATE PROFESSOR DEPARTMENT OF MATHEMATICS NEHRU INSTITUTE OF TECHNOLOGY, KALIYAPURAM, COIMBATORE - 641105 TAMILNADU COIMBATORE ---------- ----------
6)Ms. T. CHANDRAPUSHPAM
Address of Applicant :ASSISTANT PROFESSOR (SG) DEPARTMENT OF MATHEMATICS, NEHRU ARTS AND SCIENCE COLLEGE, THIRUMALAYAMPALAYAM, COIMBATORE – 641105 TAMILNADU COIMBATORE ---------- ----------
7)Dr. K KANNAN
Address of Applicant :PROFESSOR, DEPARTMENT OF MATHEMATICS, (SCIENCE AND HUMANITIES) HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATORE – 641032 TAMILNADU COIMBATORE ---------- ----------
8)Mrs. K. ANITHA
Address of Applicant :ASSISTANT PROFESSOR DEPARTMENT OF MATHEMATICS (SCIENCE AND HUMANITIES) HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATORE - 641032 TAMILNADU COIMBATORE ---------- ----------
9)Mrs. B.SUJATHA
Address of Applicant :ASSISTANT PROFESSOR DEPARTMENT OF MATHEMATICS (SCIENCE AND HUMANITIES) HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATORE - 641032 TAMILNADU COIMBATORE ---------- ----------
10)Dr VINOTHINI V R
Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF MATHEMATICS BANNARI AMMAN INSTITUTE OF TECHNOLOGY, SATHYAMANGALAM, ERODE – 638401 TAMIL NADU ERODE ---------- ----------
11)Mrs L. VADIVUKARASI
Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF MATHEMATICS, NANDHA ARTS AND SCIENCE COLLEGE, ERODE – 638052 TAMILNADU ERODE ---------- ----------

(57) Abstract :
This work investigated and characterized the influence of the variability of geometric and material properties on the dynamic response of nominally identical structural components in isolation and in a system composed of a set of these components. In addition, the importance of an analysis for the assembly of structures was shown due to the changes in dynamic behavior due to the assembly order. At first, in a simplified analysis, 3 factors that can influence the dynamic behavior of a structure were analyzed, which cause relevant changes both in natural frequencies and in modes. Subsequently, a more complex component, in the form of a frame, was introduced to be identified experimentally and, after compatibility with numerical analysis, to have its dimensional and material parameters analyzed in order to discover the relevance of each parameter in the dynamic behavior of the component. In addition, the assemblies between the components were also investigated, for comparison with the dynamic behavior of the components, and the influence of the assembly factor on the variability of the response. It can be seen, in general, that the variability of assembly parameters, resulting from the reduction of costs with the reduction of tolerances, can be a decisive factor in the operational scope of the work, which can be even more aggravated when assembly variability is considered. However, with computational use to predict behaviors, such as sensitivity analysis to define relevant parameters for the system, selective assembly to select the best configurations that promote the best responses, Monte-Carlo simulations, among others, these problems can be solved guaranteeing the economy of more complex works.

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