structured organic films.

(2) Electrical and optical properties of Organic films arising from the nano-interfacial properties of organic films.

(3) Topics and trends on the intellectual properties of organic films.

(4) Other trends and topics concerning the interfacial phenomena for organic materials.

This committee is actively in action under various plannings such as the enforcement of the annual meeting and the symposium and the publication of the special issue, etc.

Purpose of establishment and activity

As organic materials have excellent insulating and dielectric abilities, they play an important role as covering and insulating materials for power and communication cables and other electrical equipments. However, recently the techniques of constructing highly-ordered and super-structured organic films have developed rapidly and its achievements and also essential electronically and optically functionality of organic materials have become a center of attraction. In order to utilize their functions sufficiently, the understanding on the electronic phenomena and electronic energy states on the order of nanometer scale at the molecular films/electrode interface and between quite different molecular films interface is indispensable. It seems to be the most probable that highly-ordered organic thin films will be put to practical use as an intellectual films with learning effects, etc., from the completely new viewpoints in the electrical and electronic fields.

In the present situation, we are under investigation manly that what the electronical and optical properties at the interface of highly-controlled organic thin films were clarified by what kind of techniques so far. What types of their intellectual functionality were studied so far from the viewpoints of the electronic and optical properties and then what are the subjects of this matter for a future study, etc.

That is,

(1) Trends and topics on the nano-interfacial electronic phenomena and electronic states in highly-Ordered organic thin films(super-structured molecular films).

(2) Electronic and optical properties at the nano-interface and their applications.

(3) Topics and trends on the intellectual properties of organic films.

(4) Other trends and topics concerning the interfacial phenomena for organic materials.

Since the establishment of this committee the study meeting was held 8 times up to July 1998. Furthermore, the symposium entitled "Challenge to the Molecular Electronics" on 1997 national convention of IEEJ and the annual meeting on dielectrics and electrical insulation, IEEJ entitled "Organic Thin Films" had been planned in this committee and held in March and October, 1997, respectively. And also in March, 1998, this committee gave a course in trends and topics on the electrical and optical functionality and evaluating technique for highly-controlled organic arrangement thin films sponsored by Tokyo chapter, IEEJ. The special issue entitled "The Interfacial phenomena and Function of Organic Thin Films" is expected to be published from the Transaction of the IEEJ, part A in December, 1998. The three years activity of the committee will be published in Technical Report of IEEJ.

Inverter Surge Insulation

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Power electronics devices have been widely used for good controllability and energy efficiency. The recent development of high-voltage large-capacity devices, however, brings up new problems to insulation systems of machines driven by the power electronics. Particularly in inverter-driven induction motors, it has been pointed out that a repetitive impulse voltage due to the fast switching of power electronics devices can be hazardous to the motor insulation. Like vacuum circuit breakers which caused insulation troubles in motor winding insulation a couple of decades ago, recent large power electronics generate very fast switching surges which propagate through cables to motor. The IEE Japan started the Investigation committee of Inverter Surge Insulation since April 1997. The purpose of this committee is to survey and discuss the influence of inverter surge on the electrical insulation systems. Till the end of June 1998, we have already held 8 meetings and investigated more than 45 technical papers; half of them are presented at recent international conferences. Based up on the papers, we analyze general remarks on the research activities according to years, countries, organizations, testing method, used power devices and so on. Figure 1 shows the increase of papers for example. Especially since 1997, the number of papers