

Volume 19 Number 3 1994

ISSN 0079-6700

PROGRESS IN
**POLYMER
SCIENCE**

An International Review Journal

Editor: **O VOGL**
*Polytechnic University,
New York, USA*

Associate Editor: **G D JAYCOX**
*E. I. du Pont de Nemours & Co.,
Wilmington, USA*



PERGAMON PRESS
Oxford New York Seoul Tokyo



0079-6700(1994)19:3;1-1



POLYMER THIN FILMS PREPARED BY VAPOR DEPOSITION

ATSUSHI KUBONO and NORIMASA OKUI

Department of Organic and Polymeric Materials, Tokyo Institute of Technology, O-okayama, Meguro-ku, Tokyo 152, Japan

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1. INTRODUCTION

Organic thin films with highly ordered structures are of great interest because of their potential use in the fields of electronics and optics.^{1,2} A number of studies have been made on the applications of such materials. Applications include chemical, physical and biological sensors, electronic devices, non-linear optical and molecular devices. These devices can be formed by assembling monomolecular layers of specified organic materials. In spite of a large number of studies in this area, only in a few cases have these materials been successfully used for electronic and optics-based applications. This is mainly because organic thin films often show poor thermal and chemical stabilities and poor mechanical toughness. It is of interest, therefore, to create polymeric thin films of high quality for a variety of technological applications.³

Many techniques for producing polymeric thin films have been investigated³ as shown in Fig. 1. Ultra thin organic and polymeric films can be prepared in two ways: one includes wet processes like Langmuir–Blodgett (LB), spreading, dipping or solvent casting methods. The other is dry processing, such as vapor deposition, sputtering, chemical vapor deposition, plasma polymerization or vapor deposition polymerization methods. Of these methods, solvent casting of polymeric films is one of the most common means for applying optical and electron beam resists on