



Molecular Crystals and Liquid Crystals

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/gmcl16>

Synthesis and Characterization of Polyphenothiazene Iodine Complexes

Stephen T. Wellinchoff^a, Quark Y. Chen^a, Samson A. Jenekhe^b & Hatsuo Ishida^c

^a University of Minnesota Minneapolis, MN, 55455

^b Corporate Technology Center Honeywell, Inc., Bloomington, MN, 55420

^c Case Western Reserve University Cleveland, OH, 44106

Version of record first published: 20 Apr 2011.

To cite this article: Stephen T. Wellinchoff, Quark Y. Chen, Samson A. Jenekhe & Hatsuo Ishida (1984): Synthesis and Characterization of Polyphenothiazene Iodine Complexes, *Molecular Crystals and Liquid Crystals*, 106:3-4, 411-411

To link to this article: <http://dx.doi.org/10.1080/00268948408071464>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Mol. Cryst. Liq. Cryst., 1984, Vol. 106, p. 411
0026-8941/84/1064-0411/\$18.50/0
© 1984 Gordon and Breach, Science Publishers, Inc.
Printed in the United States of America

SYNTHESIS AND CHARACTERIZATION OF POLYPHENOTHAZENE
IODINE COMPLEXES

STEPHEN T. WELLINGHOFF and QUARK Y. CHEN
University of Minnesota
Minneapolis, MN 55455

SAMSON A. JENEKHE
Corporate Technology Center
Honeywell, Inc.
Bloomington, MN 55420

HATSUO ISHIDA
Case Western Reserve University
Cleveland, OH 44106

Abstract. N-methyl 3,6 dibromophenothiazene has been polymerized by using a nickel complex-assisted Grignard coupling. Vapor phase iodine doping of the organometallic polymerized material led to a conductivity increase of $10^{-11} \text{ ohm}^{-1}\text{cm}^{-1}$ to $10^{-5} \text{ ohm}^{-1}\text{cm}^{-1}$ at room temperature. The complex thus formed exhibited a semiconductor behavior with a thermal activation energy of 0.1 eV and a strong electronic IR absorbance from $4000\text{--}400 \text{ cm}^{-1}$. However, the complexed polymer could be dissolved in liquid I_2 and cast into films with air stable, room temperature conductivities as high as $1 \text{ ohm}^{-1}\text{cm}^{-1}$. The mechanisms that could give rise to these differences in behavior will be discussed.