

# 行政院國家科學委員會專題研究計畫 期中進度報告

## 高分子運動及黏彈性：電腦模擬,理論及實驗之互補互成 (第2年) 期中進度報告(精簡版)

計畫類別：個別型  
計畫編號：NSC 96-2113-M-009-020-MY3  
執行期間：97年08月01日至98年07月31日  
執行單位：國立交通大學應用化學系(所)

計畫主持人：林銀漢

處理方式：期中報告不提供公開查詢

中華民國 98年05月30日

行政院國家科學委員會補助專題研究計畫  成果報告  
x 期中進度報告

高分子運動及黏彈性：電腦模擬, 理論及實驗之互補互成

計畫類別：個別型計畫

計畫編號：NSC 96-2113-M-009-020-MY3

執行期間：97年08月01日至98年07月31日

計畫主持人：林銀潢教授

共同主持人：

計畫參與人員：

成果報告類型(依經費核定清單規定繳交)：x 精簡報告  完整報告

本成果報告包括以下應繳交之附件：

- 赴國外出差或研習心得報告一份
- 赴大陸地區出差或研習心得報告一份
- 出席國際學術會議心得報告及發表之論文各一份
- 國際合作研究計畫國外研究報告書一份

處理方式：除產學合作研究計畫、提升產業技術及人才培育研究計畫、  
列管計畫及下列情形者外，得立即公開查詢

涉及專利或其他智慧財產權， 一年  二年後可公開查詢

執行單位：國立交通大學

中華民國 98 年 05 月 21 日

**Progress Report (2008 – 2009)**  
**For the NSC-supported Research Project (96-2113-M-009-020-MY3)**

**Polymer Dynamics and Viscoelasticity:  
Interplay of Computer Simulations, Theories and Experiments**

**By Professor Yn-Hwang Lin**  
**Department of Applied Chemistry**  
**National Chiao Tung University**  
**Hsinchu, Taiwan**

A large portion of my studies on polymer dynamics and viscoelasticity in the past one year are detailed in the following three reports:

- (1) Y.-H. Lin, *Thermorheological Complexity in Polystyrene Melts and Breakdown of the Stokes –Einstein Relation in o-Terphenyl.*
- (2) Y.-H. Lin and A. K. Das, *Thermorheological Complexity as a Generic Phenomenon in Polymer Melts: Effects of Inter-Segmental Interactions on Viscoelasticity of Entanglement-Free Fraenkel Chains Studied by Monte Carlo Simulations..*
- (3) Y.-H. Lin and A. K. Das, *Monte Carlo simulations of stress growth of entanglement-free Fraenkel chains started by a step shear rate.*

The first two reports were initiated last year and mentioned in my 2007 – 2008 progress report; the third one is a new study. Even though the first two reports are fundamentally important, I have encountered difficulties in publishing them. In the last one year much effort has been devoted to the rewriting of the two reports. There are several main factors behind these difficulties: One is that these reports represent studies, which are too much of pioneering nature for the reviewers to digest. Another is the impatience and bias on the part of reviewers. For instance, the first report depends very much on the conclusion of a very extensive and intensive study which has been published in the *Journal of Physics: Condensed Matter* (**19**, 466101, 2007). Covering a very detailed study this paper is very long, reaching 31 pages; the comments from the reviewers do not indicate to me that they have read the paper. The first report has been resubmitted for publication twice after revision. The bias of the reviewers, especially of the most recent ones, can be easily observed from the conflicting remarks made by the reviewers. Similar things can be said about the second report.

As I shall reach my retirement age next year, my research activities have been and will be focused on the organization of what have been done in recent years: putting things together, making connections to literature-reported studies and writing.