Vali-e-Asr University of Rafsanjan

19th Iranian Seminar on Organic Chemistry
Vali-e-Asr University of Rafsanjan, 5 -7 Sep. 2012

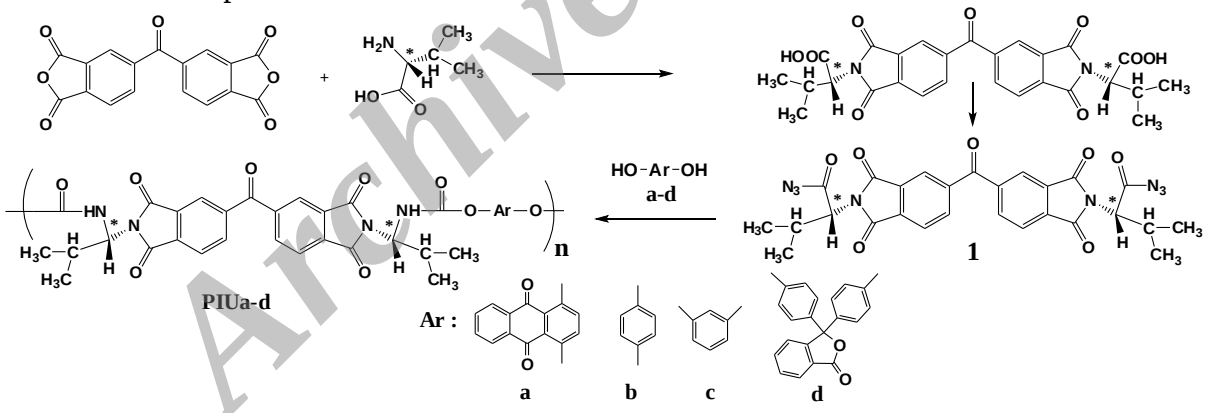
One-Step synthesis and evaluation of properties of the optically active poly(imide-urethane)s

*Hojjat Toiserkani**,[a,b] *Marziyeh Rafiaee* [c]

[a] Department of Chemistry, College of Sciences, Hormozgan University, Bandar Abbas 3995, Iran.
[b] College of Oil Engineering, Hormozgan University, Bandar Abbas 3995, Iran.
[c] Department of Chemistry, College of Sciences, Shahid Bahonar University of Kerman, Kerman 76169, Iran.
(Based on M.Sc. thesis)

E-mail: Toiserkani@yahoo.com

Polyurethanes (PU)s are a class of versatile engineering materials because of their excellent properties such as high abrasion resistance, excellent flexibility, chemical resistance, and damping ability [1]. Despite the merits of this versatile polymer, its thermal stability is a point of concern, which restricts its application above 150°C, where its acceptable mechanical properties vanish [2]. Therefore, significant synthetic efforts have been focused on improving the heat-resistance of PUs by alloying or copolymerization with polyimides while maintaining their excellent physical, mechanical and electrical properties over a wide temperature range [3]. Polymers with optically active properties have found successful uses as chiral stationary phases for enantiomeric separations [4] and shown potential applications in asymmetric catalytic reactions [5], and biomedical devices [6], etc. The objective of this study is to synthesize and characterize the optically active poly(imide–urethane)s (PIU)s derived from diacylazide **1** and various aromatic diols in dry toluene under refluxing in the presence of 1,4-diazabicyclo[2.2.2]octane (DABCO, triethylenediamine) as a catalyst via ‘‘one-pot’’ procedure. The thermal and chiroptical properties of the products as well as their solubilities are presented.



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