NMS-O-16

# SYNTHESES OF $NH_2$/$NH_2$ CAPPED ANILINE OLIGOMERS AND THEIR DERIVATIVES

**N. Miraqyan, N. Martikyan, N. Durgaryan**

*Yerevan State University, 1 Alek Manukyan Str., Yerevan 0025, Armenia*
*n.durgaryan@ysu.am*

Polyaniline and polymers obtained from aromatic amines have a special place among electroactive polymers due to their environmental stability and unique properties [1,2]. We have worked out a new and useful method for N,N-disubstituted quinonediimine synthesis using oxidative condensation of p-phenylenediamine (PPDA) in organic medium [3,4]. Particularly, $NH_2$/$NH_2$ capped aniline trimer and pentamer have been identified as a result of condensation of PPDA using molar ratio PPDA/potassium peroxydisulphate 4:1. It was found that with heating the terminal amino and quinone diimine groups of different molecules reacted. This is self condensation reaction, which proceeds according to scheme which leads to the formation of oligomers and polymers depending on the heating time. Obtained compound was oxidized by potassium persulphate with different molar ratio. Electric conductivities of both as synthesized and doped with iodine compounds were determined. Acetylation of obtained oligomers were carried out to obtain stable to heating compounds. It was shown, that the reaction of obtained oligomers with different nucleophiles provide opportunity for mono substituted aromatic amines synthesis. UV, PMR and IR spectral methods have been used to prove the structure of obtained compounds. Antibacterial and free radical scavenger properties of synthesized compounds were investigated and compaired with each other.

**References:**

[1] K. Janošević, B. Marjanović, A. Rakić, G. Ćirić-Marjanović. Progress in conducting/semiconducting and redox-active oligomers and polymers of *arylamines* *J. Serb. Chem. Soc.* 2013, *78* (11) 1809–1836.

[2] Xin-Gui Li, Mei-Rong Huang, Wei Duan. Novel Multifunctional Polymers from Aromatic Diamines by Oxidative Polymerizations, *Chem. Rev.* 2002, *102*, 3030.-2925

[3] A.H. Durgaryan, N.A. Durgaryan, R.H. Arakelyan, N.Sh. Martikyan. Method for synthesis of 1,4-quinonediimine. Patent Armenia, 2849, 25.06 2014.

[4] A.H. Durgaryan, R.H. Arakelyan, N.A. Durgaryan, oxidative polymerization of p-phenylenediamine, Russian J Gen Chem, 2014, 84, 1095