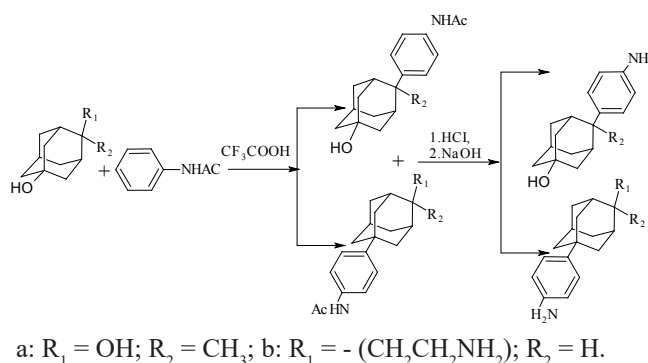


SYNTHESIS OF FAT-AROMATIC 1,4-SUBSTITUTED ADAMANT-CONTAINING DIAMINS AND POLYIMIDES ON THEIR BASIS

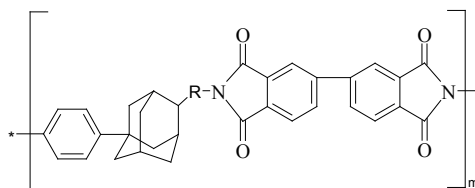
Pichugin A.M., Nakhod M.A., Potaenkova E.A., Orlinson B.S., Savelev E.N.

*Volgograd State Technical University,
400005, Volgograd, Lenin Avenue, 28
e-mail: w_marika_w@mail.ru*

We investigated the patterns of synthesis of new adamantane-containing diamines by alkylation of aromatic compounds with hydroxy derivatives of adamantane in the presence of trifluoroacetic acid. Based on the obtained diamines, polyimides with high thermal and hydrolytic stability were synthesized. Synthesis of adamantane-aromatic diamines:



We have established the conditions for the process of alkylation of aromatic compounds with hydroxy derivatives of adamantane. Main products were obtained in high yield (80-96%). The structure of the obtained compounds was confirmed by the methods of chromatography-mass- and NMR- ^1H -spectroscopy¹. Based on the synthesized diamines and DF dianhydride by the two-step method, polyimides of the following structure were obtained:



where R = single bond, $-\text{CH}_2$, $-\text{CH}_2\text{-CH}_2-$.

According to their characteristics, the obtained polyimides are at the level with known polyimides based on 1,3-substituted adamantane-containing diamines and at the same time significantly exceed fully aromatic polyimide PM in hydrolytic stability.

References

1. Reduction of unsaturated adamantyl-containing nitriles with lithium aluminum hydride in 2-methyltetrahydrofuran / И.А. Новаков [и др.] // Russian Journal of General Chemistry. - 2016. - Vol. 86, No. 6. - С. 1255-1258.