

# CEEC-TRAC4

# BOOK OF ABSTRACTS

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**4<sup>th</sup> Central and Eastern European Conference  
on Thermal Analysis and Calorimetry  
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## Synthesis and investigation of cellulose based pyridine modified microfibers for their exploitation in antibacterial textile production

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In order to prevent community origin infections new antibacterial agents and antibacterial textiles obtained by functionalization of textiles with pyridine based compounds, which can act as effective agents, has gained importance [1]. In this study, dichlorodipyridine palladium (II) ( $\text{PdCl}_2\text{L}^{1_2}$ ), dichlorodipyridine nickel (II) ( $\text{NiCl}_2\text{L}^{1_2}$ ), dichlorodipyridine copper (II) ( $\text{CuCl}_2\text{L}^{1_2}$ ), dibromodipyridine copper (II) ( $\text{CuBr}_2\text{L}^{1_2}$ ) complexes are synthesized for to be exploited for this purpose. DTA/TG, FT-IR and <sup>1</sup>H-NMR analysis of the compounds are made. Antibacterial activity of these compounds are investigated. The results are summarized in Table 1. In order to obtain antibacterial textiles from these compounds, their micro-fibers in cellulose acetate are obtained via electrospinning. Physical and chemical characterization of the electrospun agent incorporated micro-fibers are made. As is presented in Table 1 antibacterial activity of the synthesized pyridine modified cellulose fibers against E.coli is determined and compared to the antibacterial activity of Gentamicine.

Table 1. Zone diameter of the prepared complexes compared with that of Gentamisin

Complexes	Zone diameter (mm) <i>GSBL E.coli</i>
[PdCl <sub>2</sub> L <sup>1</sup> <sub>2</sub> ] (5mg/disc)	23
[NiCl <sub>2</sub> L <sup>1</sup> <sub>2</sub> ] (10mg /disc)	19
[CuCl <sub>2</sub> L <sup>1</sup> <sub>2</sub> ] (7mg /disc)	18
[CuBr <sub>2</sub> L <sup>1</sup> <sub>2</sub> ] (10mg /disc)	17
Gentamicine (10µg /disc)	24

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[1] Nakashima, T., Sakagami, Y., Ito, H. and Matsuo, M. "Antibacterial activity of cellulose fabrics modified with metallic salts", Textile Research Journal, 71(8), (2001), 688-694.