Spectra-structure relationship: syntheses, characterization, single crystal X-ray structural studies and packing analyses of two novel copper(II) complexes: $[Cu(pyridine)_2(H_2O)_4](p\text{-toluenesulfonate})_2$ and $[Cu(\beta\text{-picoline})_2(H_2O)_4]\text{-}(p\text{-toluenesulfonate})_2$.

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In an attempt to formulate spectra–structural relationship to provide information on coordination around copper(II) ion in aqueous solution, two novel copper(II) complexes were investigated. $[Cu(py)_2(H_2O)_4](p\text{-toluenesulfonate})_2$, **1** and $[Cu(\beta\text{-pic})_2(H_2O)_4](p\text{-toluenesulfonate})_2$, **2**(py = pyridine, β-pic = β-picoline) were isolated by addition of py and β-pic respectively to the hydrated $Cu(p\text{-toluenesulfonate})_2$ suspended in water–methanol (1:4) mixture. The newly isolated complexes have been characterized by elemental analyses, TGA, spectroscopic techniques (EPR, IR and UV/Visible), conductance, magnetic susceptibility studies and single crystal X-ray structure determination.

X-ray structural studies revealed the presence of uncoordinated p-toluenesulfonate anions in both of the crystal structures. The copper cations coordinate to two py/β-pic and four water molecules; the six donor atoms span as a distorted octahedron in both case. The crystal packing in both the complexes **1** and **2** are stabilized by CHO, CHπ and $\pi\pi$ stacking interactions besides electrostatic forces of attraction.

Słowa kluczowe

copper(II), Coordination Chemistry, Pyridine, β-Picoline, p-Toluenesulfonate

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