A new crown ether carrying two pyrene groups with nitrogen-sulfur donor atom was designed and synthesized by the reaction of the corresponding macrocyclic compound and 1-(bromomethyl)pyrene. The influence of metal cations such as Al$^{3+}$, Zn$^{2+}$, Fe$^{2+}$, Fe$^{3+}$, Co$^{2+}$, Ni$^{2+}$, Mn$^{2+}$, Cu$^{2+}$, Cd$^{2+}$, Hg$^{2+}$ and Pb$^{2+}$ on the spectroscopic properties of the ligand was investigated in acetonitrile-dichloromethane solution (1/1) by means of absorption and emission spectrometry. The complexation stoichiometry and complex stability constant of the novel ligand with Cd$^{2+}$, Fe$^{2+}$, Fe$^{3+}$, Pb$^{2+}$, Ni$^{2+}$ and Zn$^{2+}$ cations were determined by spectrophotometric titration experiments. The presence of excess amounts of Al$^{3+}$, Zn$^{2+}$, Fe$^{2+}$, Fe$^{3+}$, Co$^{2+}$, Ni$^{2+}$, Mn$^{2+}$, Cu$^{2+}$, Cd$^{2+}$, Hg$^{2+}$ and Pb$^{2+}$ cations caused an enhancement of pyrene fluorescence. The ligand showed sensitivity for Ni$^{2+}$ with respect to other metal cations.

![Figure 1. The structure of ligand (1)](image)

References