New radical-cation salts based on bis(ethylenedithio)tetrathiafulvalene (BEDT-TTF or ET) were synthesized: (ET)\(_2\)[8,8’-Cl\_2-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)] (1), (ET)\(_2\)[8,8’-Br\_2-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)] (2) and (ET)[8,8’-I\_2-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)] (3). Their crystal structures were studied by X-ray analysis, electroconductive and magnetic properties were measured in a wide temperature range. Salts (2), (3) appeared to be the first radical-cation salts with [8,8’-I\(_2\)-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)]- and [8,8’-Br\(_2\)-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)]- anions, respectively. In the literature [8,8’-I\(_2\)-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)]- and [8,8’-Br\(_2\)-3,3’-Fe(1,2-C\(_2\)B\(_9\)H\(_{10}\))\(_2\)]- anions are presented for the first time. Salts (1) - (3) were found to be paramagnetic. Their room temperature conductivities were 5, 2 and 1\(\times\)10\(^{-6}\) Ohm\(^{-1}\)cm\(^{-1}\), respectively.

**Keywords:** organic conductors, paramagnetic, X-ray study