

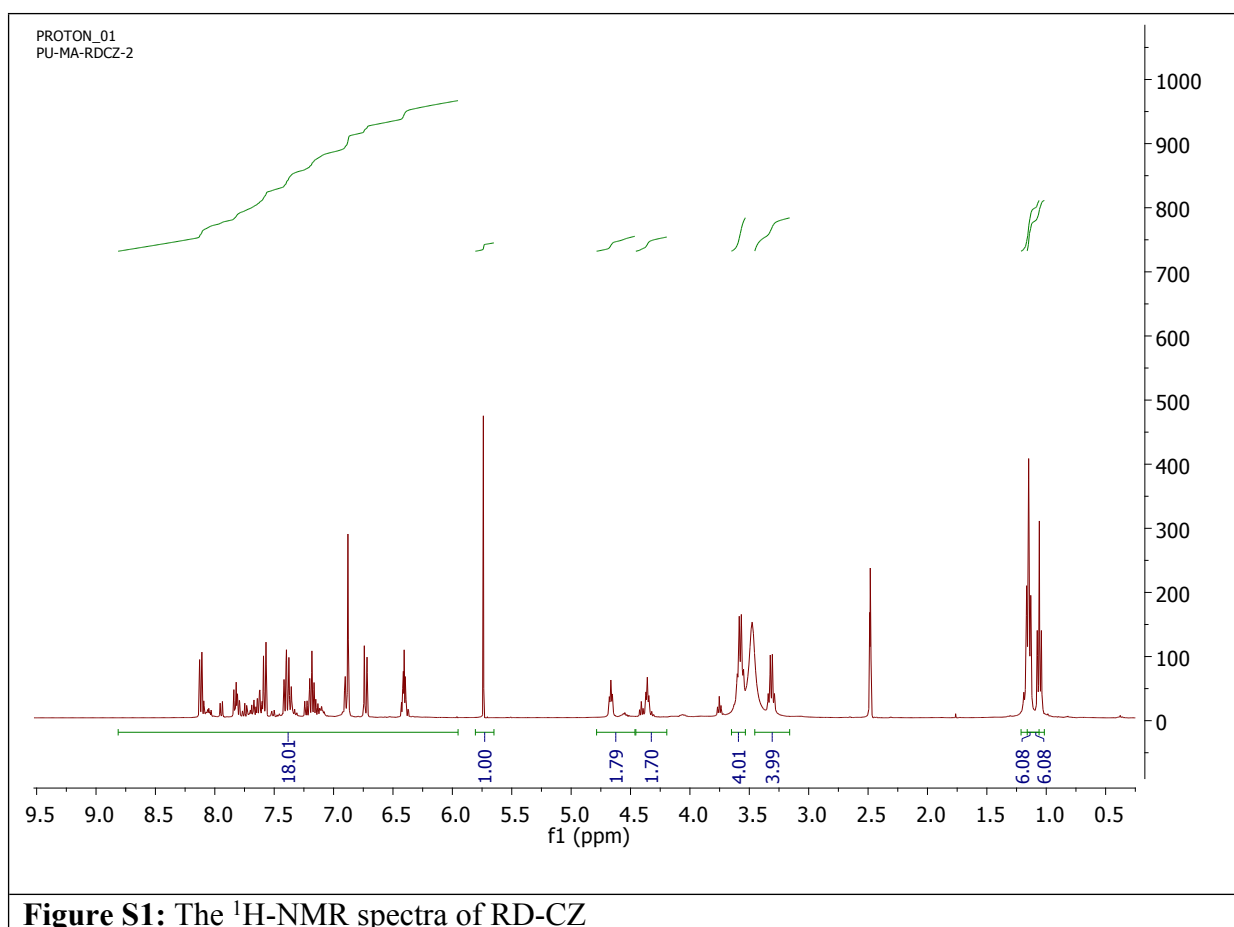
## Rhodamine-Based Conjugate Polymer: Potentiometric, colorimetric and voltammetric sensing of mercury ion in aqueous medium.

Rukiye Ayranci and Metin Ak\*

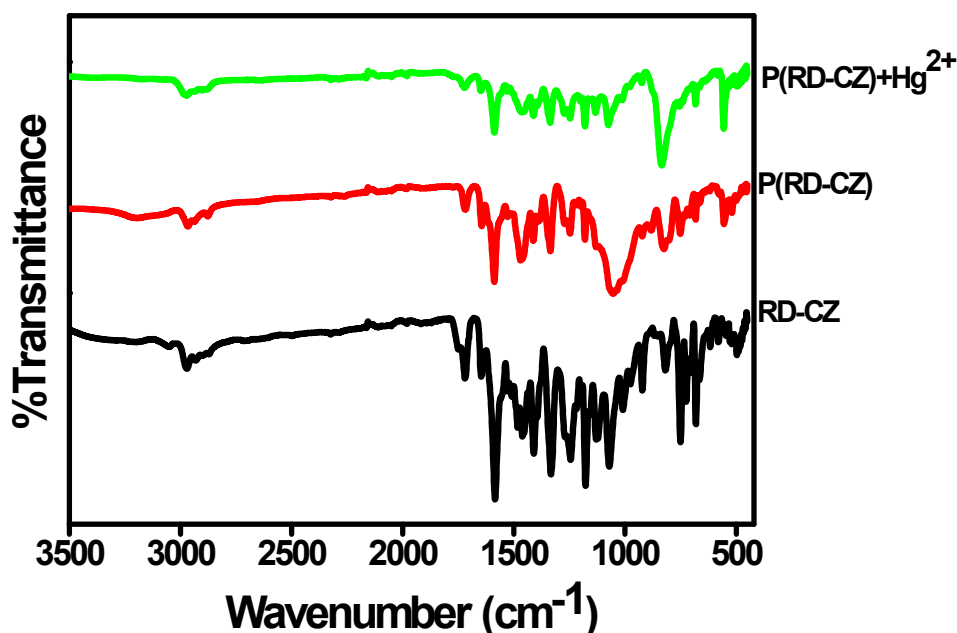
*Pamukkale University, Faculty of Art and Science, Chemistry Department, Denizli, Turkey E-mail:*

*metinak@pau.edu.tr*

The  $^1\text{H-NMR}$  spectra of RD-CZ have the characteristic peaks of the structure, as illustrated in Figure S1.  $^1\text{H-NMR}$  (400 MHz,  $\text{DMSO-d}_6$ )  $\delta\text{H/ppm}$ : 1.04 (t; 6H), 1.14 (t; 6H), 3.31 (m; 4H), 3.57 (m; 4H), 4.35 (t; 2H), 4.66 (t; 2H), 5.72 (s; 1H), 6.33-8.43 (m; 18H-Arm).



In FTIR spectrum of the RD-CZ monomer which is shown in Figure S2 (black line), the following absorption bands were observed at  $682\text{ cm}^{-1}$  ( $\text{C-H}_a$  out of plane bending of thiophene),  $1181\text{ cm}^{-1}$  (C-N stretching),  $1466\text{ cm}^{-1}$  (C-H bending),  $1588\text{ cm}^{-1}$  (aromatic C=C stretching),  $1727\text{ cm}^{-1}$  (C=O stretching). In Figure S2 (red line), the FTIR spectra of electrochemically synthesized P(RD-CZ) was showed the characteristic peaks of the monomer and new strong absorption peak at  $1057\text{ cm}^{-1}$  due to incorporation dopant ion ( $\text{PF}_6^-$ ) into polymer film. Then, after interaction of  $\text{Hg}^{2+}$  ions, (green line) stretching vibration of C-O appears at  $1044\text{ cm}^{-1}$  in P(RD-CZ) which shifts to the  $1079\text{ cm}^{-1}$ . This result indicate that the binding of the  $-\text{C-O}$  group on rhodamine moieties of P(RD-CZ) with  $\text{Hg}^{2+}$  ions.



**Figure S2:** FTIR spectra of RD-CZ, P(RD-CZ) and P(RD-CZ)+ $\text{Hg}^{2+}$

In FTIR spectrum of the RD-CZ monomer which is shown in Figure S2 (black line), the following absorption bands were observed at  $682\text{ cm}^{-1}$  ( $\text{C-H}_a$  out of plane bending of thiophene),  $1181\text{ cm}^{-1}$  (C-N stretching),  $1466\text{ cm}^{-1}$  (C-H bending),  $1588\text{ cm}^{-1}$  (aromatic C=C stretching),  $1727\text{ cm}^{-1}$  (C=O stretching). In Figure S2 (red line), the FTIR spectra of electrochemically synthesized P(RD-CZ) was showed the characteristic peaks of the monomer and new strong absorption peak at  $1057\text{ cm}^{-1}$  due to incorporation dopant ion ( $\text{PF}_6^-$ ) into polymer film. Then, after interaction of  $\text{Hg}^{2+}$  ions, (green line) stretching vibration of C-O appears at  $1044\text{ cm}^{-1}$  in P(RD-CZ) which shifts to the  $1079\text{ cm}^{-1}$ . This result indicate that the binding of the  $-\text{C-O}$  group on rhodamine moieties of P(RD-CZ) with  $\text{Hg}^{2+}$  ions.