***Supplementary File***

**Critical Aspects in Exploring Time Analysis for the Voltammetric Estimation of Kinetic Parameters of Surface Electrode Mechanisms Coupled with Chemical Reactions**

***Rubin Gulaboski1\*, Valentin Mirceski2,3, Milivoj Lovric4***

*1Faculty of Medical Sciences, Goce Delcev University, Stip, Macedonia*

*2Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss Cyril and Methodius University, Arhimedova 5, 1000, Skopje, Macedonia*

*3Faculty of Chemistry, Department of Inorganic and Analytical Chemistry,University of Lodz, Tamka 12, 91–403 Lodz, Poland*

*4Divkovićeva 13, Zagreb 10090, Croatia*



**Fig. S1**. *Simple surface electrode reaction*: Dependence of the net-peak current **net,p on the logarithm of the dimensionless electrode kinetic parameter *K*ET (quasireversible maximum) simulated for two vales of the SW amplitude (the values are given in the plot). The simulation conditions are: electron transfer coefficient **= 0.5, the stoichiometric number of electrons *n* = 2, temperature *T* = 298 K, and step potential d*E* = 4 mV.

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**Fig. S2.** *Simple surface electrode reaction*: The phenomenon of the net-peak splitting as a function of dimensionless electrode kinetic parameter *K*ET (the values are given in the plot), for the SW amplitude of *E*sw = 50 mV. Other conditions of the simulations are identical as for Fig. S1.



**Fig. S3.** *Simple surface electrode reaction*: The potential separation *E*p of the split net-peaks as a function of the logarithm of the dimensionless electrode kinetic parameter *K*ET for the SW amplitudes of *E*sw = 30 mV (***1***), 40 mV (***2***) and 50 mV (***3***). Other conditions of the simulations are identical as for Fig. S1