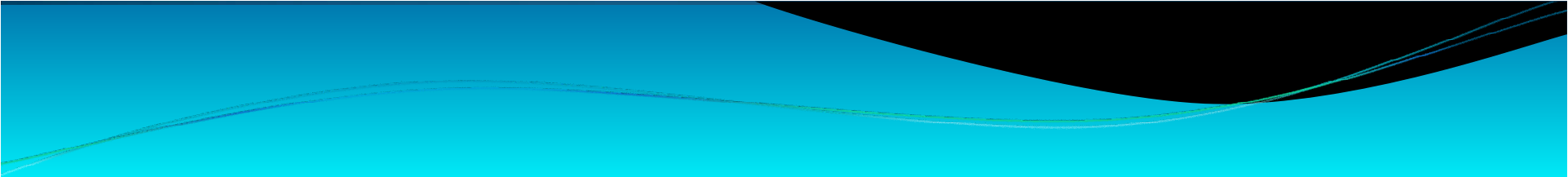


Electrochemical impedance investigation of cholesterol enriched supported films of lipids

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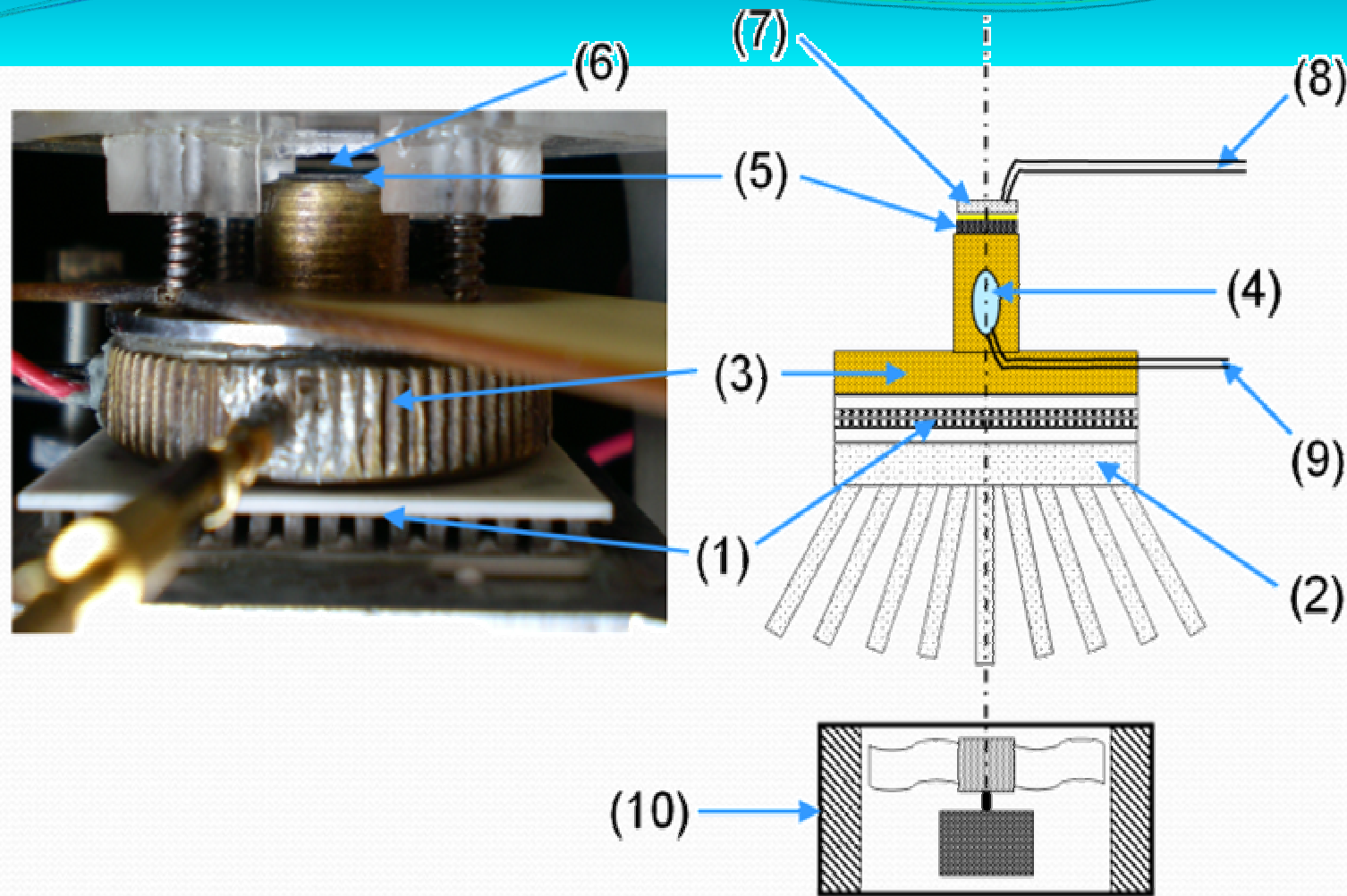
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In the present work we study the influence of cholesterol on the physico-chemical parameters of solid-supported liquid lipid films.

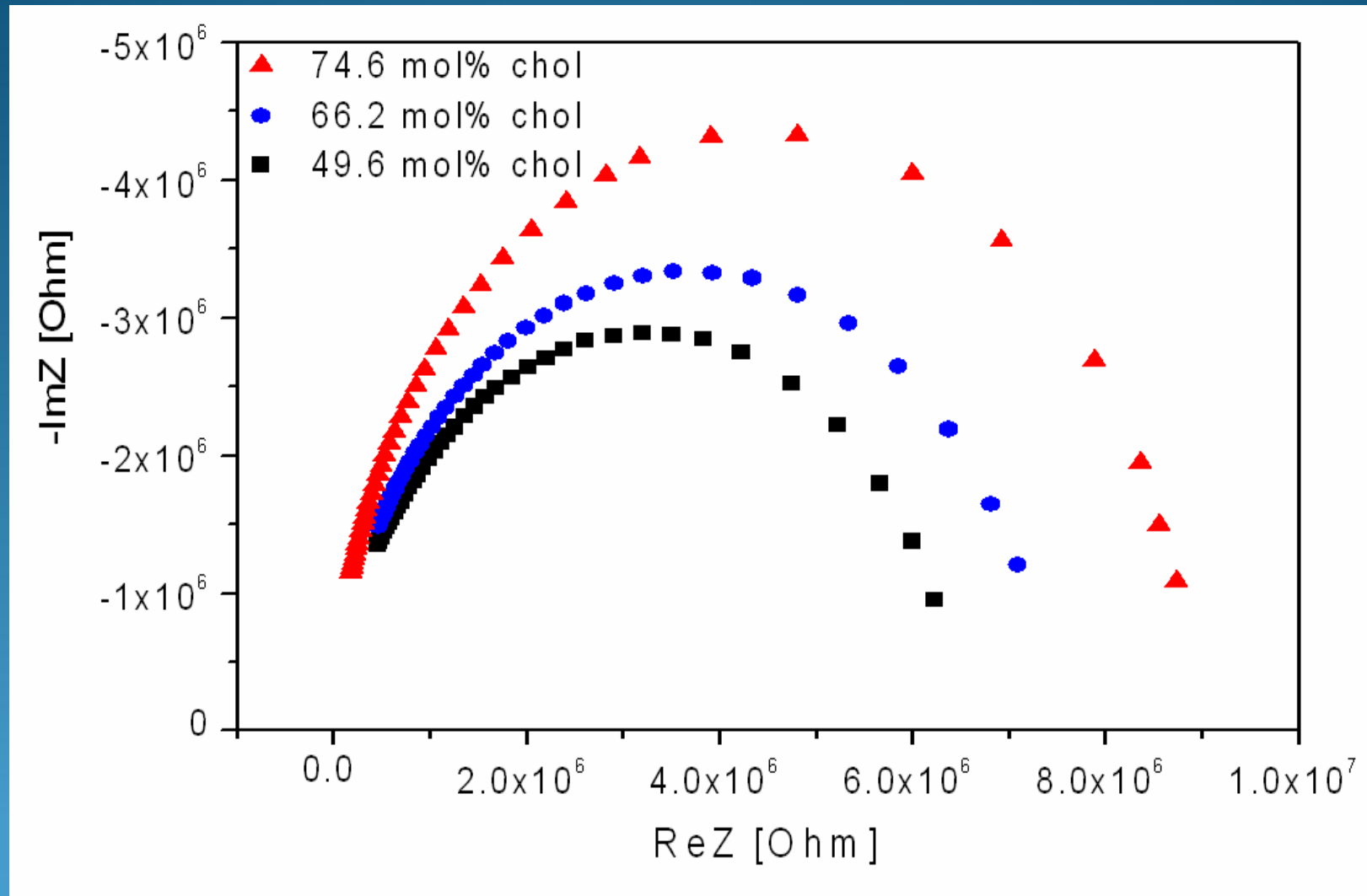
We evaluated the specific impedance behavior at different frequencies.

Overall view (left) and schematic (right) of the experimental set-up



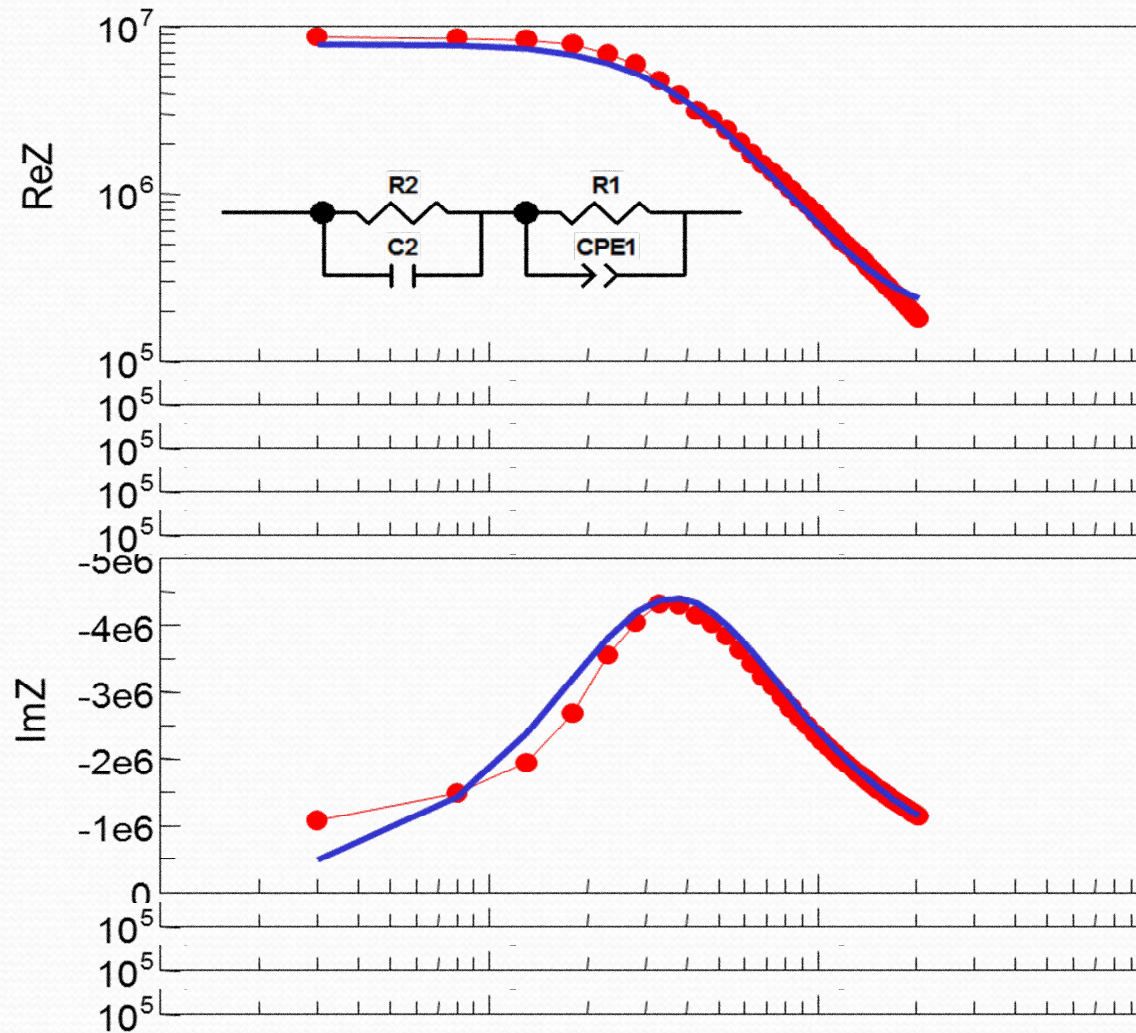
Overall view (left) and schematic (right) of the experimental set-up: 1) Peltier element; 2) Radiator; 3) Brass holder for the first electrode; 4) Thermoresistor embedded in the brass holder; 5) First electrode; 6) Second electrode on Plexiglas holder; 7) Pt thermometer (ceramic substrate with evaporated platinum Pt wire); 8) Leads of Pt thermometer; 9) Leads of thermoresistor; 10) Fan

Results and Discussion :



Nyquist plot for three types of lecitin films with different concentration of cholesterol: 49,6, 66,2 and 74,6 mol %

Results and Discussion



A fit of the Bode plots with the equivalent circuit used in the work (inset). A loop of parallel ideal resistor $R2$ and ideal capacitor $C2$ is connected in series with so called ARC element consisting of ideal resistor $R1$ and element with constant phase CPE1 .

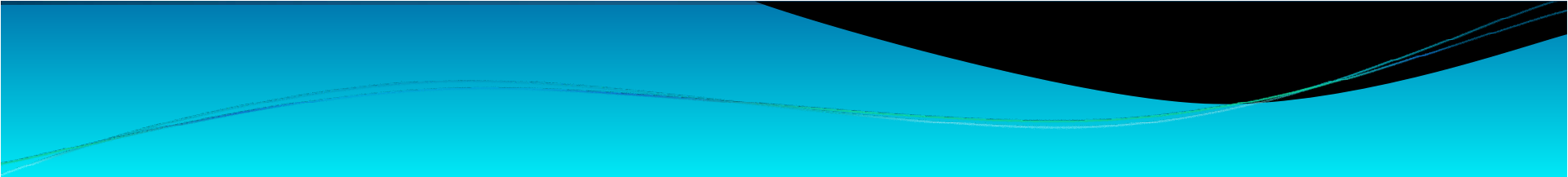
Red points are experimental data and blue line is the fit.

Conclusions :

We studied the phase behavior of cholesterol modified solid supported lecithin films. We found that such structures are arranged in two distinguished zones:

1. Molecular layers closely attached to the rigid support
2. Bulk phase of initial forming solution

This stratification pattern was established in earlier studies of much thinner lipid layers. Our results shed new light on the film architecture. They prove that EIS is a reliable tool for investigation of membrane model systems.



THANK YOU FOR YOUR ATTENTION !!!

