



Prolog

By this presentation will be deduced the possibility of direct watching of the processes in a fictive or non fictive „triboplasma“ [2] by means of a modified Nano-Tribometer.

Nano-Tribometers [3,4,5] are special scanning probe microscopes (SPM), using special cantilever constructions for multi-purpose friction measuring in the nano scale. The task will be to watch directly (live) the below mentioned triboplasma processes by means of a modified SPM: A Tandem SPM with the possibility of simultaneous observation of the action of an AFM by means of a coupled STM. This should be realised by a double tip (tandem) cantilever, one of the tips (electrically insulated) is in direct mechanical interaction with a metallic surface (AFM), the second, electrically conductive, without direct touching of the sample, serves as STM. „Big Brother is Watching You“ [George Orwell]

<p>Until now ...</p> <p>... There are great difficulties of directly observing materials undergoing tribochemical reactions at microscopic or molecular levels ...</p>	<p>Definitions</p> <ul style="list-style-type: none"> Tribochemistry is a branch of chemistry dealing with the chemical and physico-chemical changes of solids due to the influence of mechanical energy. Mechanochemistry is a branch of chemistry which is concerned with chemical and physico-chemical transformations of substances in all states of aggregation produced by the effect of mechanical energy. Triboemission is defined as Emission of electrons, charged particles, lattice components, photons etc. under mechanical action onto the solid surface. Magma-Plasma-Model (MPM) is the heuristic model of initial interaction of solid surface with mechanical energy impact. An extremely short-lived plasma-like state is assumed, where all components react with all components. The relaxation states of the plasma state are termed as edge plasma and post plasma. 	<p>Task</p> <p>The Task will be: The direct experimental observation of the triboplasma by on line observation („Just in Time“) of tribo-emission of electrons due to the change of chemical environment with atomic resolution. Tandem Nanoscope can work in all chemical environments as in solid-/liquid systems too (Tribo- Electrochemistry)!</p>
<p>The course of tribochemical reactions (2)</p> <ol style="list-style-type: none"> Reaction of the solid without mechanical treatment Rising reactivity with mechanical treatment Stationary reactivity within mechanical treatment Decay of reactivity after mechanical treatment 	<p>Magma Plasma Model (MPM) „Triboplasmas“ (2)</p>	<p>Energetic Decay or Relaxation of Triboplasmas(2)</p>
<p>Principle of a „Tandem Nanoskopes“</p>	<p>ICON</p>	<p>Second Needle Is Watching</p>
<p>Tribophysical Effects Classification of Triboemission phenomena by physical nature</p>	<p>Epilogue & Bequest</p> <p>Dear colleagues, the „Tandem Nanoscope“ is only a fiction, an idea!</p> <p>Please, realize this fiction with your valuable experiments and write a new chapter in the history of mechanochemistry or tribochemistry, using novel scanning probe microscopy technologies!</p>	<p>Tandem Nanoskope</p>