Supporting Information for

The Jones-Ray Effect is not Caused by Surface Active Impurities

Halil I. Okur[1,‡], Chad I. Drexler[2,‡], Eric Tyrode[1,4], Paul S. Cremer[2,3], Sylvie Roke[1]

[1]Laboratory for Fundamental BioPhotonics (LBP), Institute of Bioengineering (IBI) and Institute of Materials Science (IMX), School of Engineering (STI) and Lausanne Center for Ultrafast Science (LACUS), École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland.

[2]Department of Chemistry and [3]Biochemistry and Molecular Biology, The Pennsylvania State University, Pennsylvania, PA 16802, USA.

[4]Department of Chemistry, School of Engineering Sciences in Chemistry, Biotechnology and Health, KTH Royal Institute of Technology, SE-10044, Stockholm, Sweden

This SI includes

Figure S1

An impurity-based mechanism for the Jones-Ray effect would imply that an inherent level of irreproducibility should be present between researchers and at different locations where piping through which water flows is different, containers are different etc. To address this, we have performed surface tension measurements with same surface-cleaning procedure at both EPFL and Penn State University, carried out by different researchers (Fig. S1). The surface tension of pure water was measured (grey area) followed by that of 2 mM NaCl (light green area). A solution of 2 mM NaCl and 5 nM sodium dodecylbenzene sulfonate (NaDBS) was introduced to a piranha cleaned glass dish, well stirred and probed (light blue area, point #1). This was followed by surface aspiration and subsequent measurement of the surface tension (light blue area, point #2) indicated by an arrow in Figure S1. The measured surface tension closely matched that from 2 mM NaCl solutions alone. Changing the solution again to ultrapure water, the initial surface tension value of pure water prior to addition of salt solutions was recovered. This indicates that the data in Figure 1B of the parent manuscript are indeed ubiquitous. Furthermore, trace surface impurities can and do impact the surface tension, but clearly are not the fundamental reason for the Jones-Ray effect.

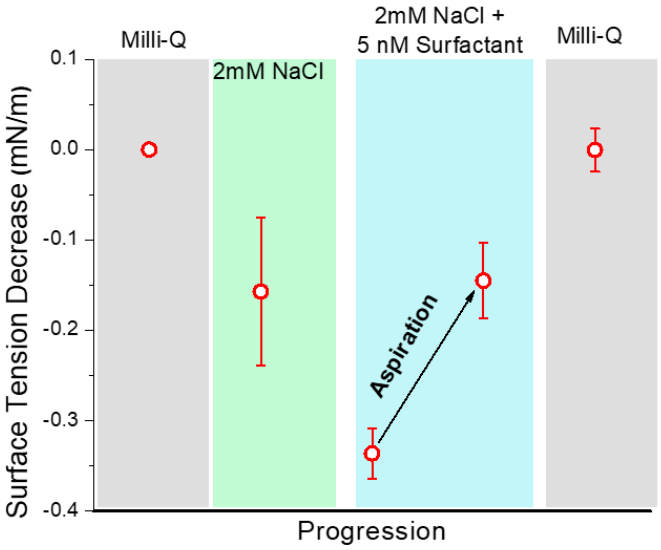

Figure S1. Jones-Ray effect and results of surface cleaning are reproducible. The same approach in data collection as shown in Figure 2B of the parent manuscript was used, except that NaCl was used to prove the non-ion specificity of the Jones-Ray effect. Error bars represent uncertainties from triplicate measurements.