

**Corrections to Relaxation Times in Single Event Electrospraying Controlled by Nozzle Front Surface Modification** [Langmuir 2009, 25, 2540. DOI: 10.1021/la8021408]. Urszula Stachewicz,\* J. Frits Dijkman Dirk Burdinski, Caner U. Yurteri, and Jan C. M. Marijnissen

Repeated measurements to further the studies on single event electrospraying (SEE) revealed a mistake in the measured conductivity value of the mixture of ethylene glycol and deionized water in the proportion of 70%/30% (v/v), respectively. It was reported in the Electrospray Liquid section (page 2542) that the conductivity is  $\kappa = 8.7 \times 10^{-6}$  S/m. This should be replaced by  $\kappa = 2.7 \times 10^{-4}$  S/m.

Consequently, based on this corrected value, the RC time,  $\tau_{RC(2)}$  changes, and Table 1 becomes (page 2544):

**Table 1. Dimension of the Capillary and Meniscus, and Characteristic Values of Electrospraying Processes in Which the Meniscus Depends on the ID or OD of the Capillary**

| parameter  | meniscus size depended on OD | meniscus size depended on ID |
|--|------------------------------|------------------------------|
| diameter of meniscus base [m]                                | $60 \times 10^{-5}$          | $5 \times 10^{-5}$           |
| liquid height in the capillary $H$ [m]                       | 0.03                         | 0.03                         |
| bias voltage $U_b$ [V]                                       | 2500                         | 0                            |
| pulse voltage $U_p$ [V]                                      | 500                          | 2700                         |
| gap height $d+h$ [m]   | $1.7 \times 10^{-3}$         | $0.9 \times 10^{-3}$         |
| mean value of field strength at $U_b$ [V/m]                  | $1.45 \times 10^6$           | 0                            |
| mean value of field strength at $U_{max}$ [V/m] <sup>a</sup> | $1.73 \times 10^6$           | $3 \times 10^6$              |
| meniscus height $h$ [m]                                      | $297 \times 10^{-6}$         | $10 \times 10^{-6}$          |
| meniscus curvature radius $r_c$ [m]                          | $30 \times 10^{-5}$          | $3.63 \times 10^{-5}$        |
| capacity $C_s$ [F]   | $36.6 \times 10^{-15}$       | $4.11 \times 10^{-15}$       |
| capacity $C_l$ [F]   | $2.3 \times 10^{-15}$        | $2.3 \times 10^{-15}$        |
| RC time $\tau_{RC(2)}$ [s]                                   | $26 \times 10^{-6}$          | $3 \times 10^{-6}$           |
| reshaping time $\tau_{m-c}$ [s]                              | $1.72 \times 10^{-3}$        |                              |
| refill time $\tau_{rf}$ [s]                                  | 454                          | $4.92 \times 10^{-5}$        |
| frequency in capillary $f_c$ [Hz]                            | 0.18                         | 547                          |
| damping in capillary $\Gamma_c$ [1/s]                        | 256                          | 0.0845                       |

<sup>a</sup> $U_{max}$  is considered here as sum of  $U_b$  and  $U_p$ .

As a further consequence of this error, in the related text of the Relaxation Times in Electrospraying section (page 2545) the following corrections are required:

The RC time  $\tau_{RC(1)}$  should be corrected here as well:  $50.3 \mu s$  should be replaced by  $1.6 \mu s$ .

The charge relaxation time of  $50.3 \mu s$  should be replaced by  $1.6 \mu s$ .

The value of the resistance  $R_c$  of  $21.86 G\Omega$  should be replaced by  $0.7 G\Omega$ .

The resistance of the meniscus  $R_m$ ,  $0.093 G\Omega$ , should be corrected to be  $0.003 G\Omega$ .

In the discussion related to these values, the following two statements have been made:

(1) In the Comparison of SEE with Unmodified and Modified Capillaries section (page 2548, first column): “For the ID-defined meniscus,  $\tau_{RC(2)}$  is approximately  $90 \mu s$ . However, it is difficult to experimentally obtain stable SEE with a pulse shorter than  $200 \mu s$ . It was observed that the pulse time had to be approximately twice the calculated value of  $\tau_{RC(2)}$  to get enough charge for the stable electrospraying event with the modified capillary.”

(2) In the Conclusions section (page 2548, second column): “In the case of the modified capillary, the pulse time is limited by the RC time.”

These conclusions are only slightly affected by the correction. According to the recalculated RC times, based on the corrected conductivity values, the recalculated relaxation times related to the electrical effects in SEE are much shorter. New results suggest that the pulse time for stable SEE is not limited by the electrical phenomena but rather by the hydrodynamic effects.

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