Errata

Extensional and Surface-Tension-Driven Fluid Flows in Microstructured Optical Fibre Fabrication

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This document contains a list of errata for the thesis ‘Extensional and Surface-Tension-Driven Fluid Flows in Microstructured Optical Fibre Fabrication’ as published on February 1, 2016. These include typographical and grammatical errors.

Page 16
Following the publication of this thesis the paper by Tronnolone, Stokes, Foo and Ebendorf-Heidepriem (2016) was published. See the corresponding note for the entry in the bibliography on page 354.

Page 25
The reference to Schott has been changed to the Schott Glass Company. See the entry for page 352.

Page 41
The form of the Navier–Stokes equations given in (3.3.5a) are for constant viscosity, when the remainder of the derivation allows for a varying viscosity. Equation (3.3.5a) should read

\[ \rho \left( \frac{\partial u}{\partial t} + u \cdot \nabla u \right) = -\nabla p + \nabla \cdot \left[ \mu \left( \nabla u + \left( \nabla u \right)^T \right) \right] + \rho g k. \]

Page 43
The dynamic boundary condition (3.3.6.a) has an incorrect factor of 2 on the left-hand side. The equation should read

\[ -\rho n + \mu |\nabla u + (\nabla u)^T| n = (-\gamma \kappa - p_a(t)) n. \]

This error is not carried through in the remainder of the thesis.
Page 45
There is an $\epsilon^2$ missing from equation 3.3.8c, which should be multiplying the $\hat{z}$ derivative in the second set of parentheses. This is a typographical error only and is not carried through the analysis. The equation should read

$$\epsilon^2\text{Re} \left( \frac{\partial \hat{w}}{\partial \hat{t}} + \hat{u} \frac{\partial \hat{w}}{\partial \hat{x}} + \hat{v} \frac{\partial \hat{w}}{\partial \hat{y}} + \hat{w} \frac{\partial \hat{w}}{\partial \hat{z}} \right)$$

$$= -\epsilon^2 \frac{\partial \hat{p}}{\partial \hat{z}} + \frac{\partial}{\partial \hat{x}} \left[ \mu^* \left( \epsilon^2 \frac{\partial \hat{u}}{\partial \hat{z}} + \frac{\partial \hat{w}}{\partial \hat{x}} \right) \right] + \frac{\partial}{\partial \hat{y}} \left[ \mu^* \left( \epsilon^2 \frac{\partial \hat{v}}{\partial \hat{z}} + \frac{\partial \hat{w}}{\partial \hat{y}} \right) \right]$$

$$+ \epsilon^2 \frac{\partial}{\partial \hat{z}} \left( 2\mu^* \frac{\partial \hat{w}}{\partial \hat{z}} \right) + \epsilon^2 g^*.$$  \hspace{1cm} (3.3.8c)

Page 56
In the equation for $I_1^+$ the constant $\gamma^*$ is missing from the second and third expressions. This mistake is a typographical error only and is not carried through to the subsequent analysis.

Page 104
There is an incorrect parenthesis in the ODE for the epicycloids, and the sentence introducing the equations for two touching disks should not have the ‘be’.

Page 125
The sentence beginning ‘The central inner hole has become elongated…’ used ‘while’ twice and read poorly. The second while has been removed and replaced with ‘and’.

Page 214
In Section 6.5 the parameter $g^*$ was left in the equations. This doesn’t change the equations; however this section should have continued using $g^* = 1$. This occurs twice on page 214, multiplying $S_0$ on the right-hand side of the relevant equations.

Page 228–231, 234, 241, 252 and 257
Throughout Chapter 7 the scaled viscosity $\mu^*$ was incorrectly written as $\mu$. This occurred on page 228, three times on 229, 230, twice on 231, 234, 241, twice on 252 and 257.

Page 230
The term $H(\eta)$ in equation 7.3.7 should be $H(\tau)$.

Page 233
The third equation in (7.3.10) is incorrect. It should be $-6m/(2\eta + c - t)$.

Page 238
In the first sentence of 7.5.4 it should be ‘affects’ not ‘effects’.
Page 240
In the last sentence before Section 7.6 $\mu^*_0$ should be $\mu_0$.

Page 241
In the sentence beginning ‘The billet sizes are based on...’ it should read ‘3- and 7-hole preforms’ rather than ‘three- and 7-hole preforms’.

Page 256
In Figure 7.6.14 the exponent from the right-hand side axis should be in the axis label.

Page 258
The abbreviation in the reference to Wilson at the top of the page should be ‘eqn’ not ‘eq’, and should state that the equations are on page 563.

Page 258
The equations in section 7.7.3 have a typographical error only. The first equation should read
\[ t = \eta + \frac{1}{\delta} \left[ \chi - 1 + \frac{\eta}{6\delta} \log \left( \frac{6\delta \chi - \eta}{6\delta - \eta} \right) \right]. \]
The expression for $\eta^2_c$ has a $\delta$ in place of a $\lambda$ and should read
\[ \eta^2_c = \frac{6}{\lambda} \left( \frac{1}{\lambda} \log \frac{1 - \lambda}{1 - \lambda \chi} + \frac{1 - \chi}{(1 - \lambda \chi)(1 - \lambda)} \right), \]
The third equation carries this mistake and also has a $\delta$ in place of a $\lambda$. It should read
\[ \eta^2_c = \frac{6}{\lambda} \left( \frac{1}{\lambda} \log (1 - \lambda) + \frac{1}{1 - \lambda} \right). \]
The following paragraph should state that $\lambda = 6\delta/\eta$, so that $\delta = \lambda \eta_c/6$ The calculations that follow are correct.

Page 292
Only the vertical axes are drawn on a logarithmic scale.

Page 348
The reference to the PhD thesis by Manning (2011) has been updated to include the institution that awarded the degree. It now reads: Manning, S. (2011), A study of tellurite glasses for electro-optic optical fibre devices, PhD thesis, School of Chemistry and Physics, University of Adelaide.

Page 352
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Page 354

Page 356
The four references to papers by S.-C. Xue have inconsistent hyphenation; however, this reflects the hyphenation as given on the published articles.