

Table 1

Lipid area (A), thermal area expansivity ($\alpha_A^T = (1/A)(\partial A/\partial T)\Pi$), and area expansivity as a function of hydrocarbon chain length ($\alpha_A^n = (1/A)(\partial A/\partial n)\Pi$) for the various fluid bilayers studied. The uncertainties (+/-) shown below the main values are calculated according to Eq. (2).

| | 20 °C | | | 30 °C | | | 50 °C | | | 60 °C | | | k | dk |
|--------|---------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|-----------------------------------|------|------|
| | A [Å ²] | α_A^T [deg ⁻¹] | α_A^n [deg ⁻¹] | A [Å ²] | α_A^T [deg ⁻¹] | α_A^n [deg ⁻¹] | A [Å ²] | α_A^T [deg ⁻¹] | α_A^n [deg ⁻¹] | A [Å ²] | α_A^T [deg ⁻¹] | α_A^n [deg ⁻¹] | | |
| DLPC | 59.6 1.19 | 0.00285 0.00039 | N/A | 60.8 1.22 | 0.0028 0.00038 | -0.0074 0.01002 | 64.8 1.3 | 0.00262 0.00036 | -0.0066 0.00476 | 65.9 1.32 | 0.00258 0.00036 | -0.0053 0.00253 | 0.17 | 0.02 |
| DMPC | gel | | | 59.9 1.2 | 0.00317 0.00073 | -0.0075 0.01017 | 63.3 1.27 | 0.003 0.00069 | -0.0068 0.00488 | 65.7 1.31 | 0.00289 0.00067 | -0.0053 0.00254 | 0.19 | 0.04 |
| DPPC | gel | | | gel | | | 63.1 1.26 | 0.00301 0.00212 | -0.0068 0.00489 | 65 1.3 | 0.00292 0.00206 | -0.0054 0.00257 | 0.19 | 0.13 |
| DSPC | gel | | | gel | | | gel | | | 63.8 1.28 | N/A | 0.00549 0.00262 | | |
| POPC | 62.7 1.25 | 0.00223 0.00036 | 0.01754 0.02108 | 64.3 1.29 | 0.00218 0.00035 | 0.01866 0.02059 | 67.3 1.35 | 0.00208 0.00034 | 0.01189 0.02104 | 68.1 1.36 | 0.00206 0.00033 | 0.01909 0.02094 | 0.14 | 0.02 |
| SOPC | 63.8 1.28 | 0.00219 0.00036 | 0.01724 0.02072 | 65.5 1.31 | 0.00214 0.00035 | 0.01832 0.02021 | 68.1 1.36 | 0.00206 0.00033 | 0.01175 0.02079 | 69.4 1.39 | 0.00202 0.00033 | 0.01873 0.02055 | 0.14 | 0.02 |
| DPhyPC | 78 1.56 | 0.00218 0.00043 | N/A | 80.6 1.61 | 0.00211 0.00041 | N/A | 83.6 1.67 | 0.00203 0.0004 | N/A | 84.8 1.7 | 0.002 0.00039 | N/A | 0.17 | 0.03 |
| | | saturated | OPC | | saturated | OPC | | saturated | OPC | | saturated | OPC | | |
| | k | | 1.1 | | -0.45 | 1.2 | | -0.43 | 0.8 | | -0.35 | 1.3 | | |
| | dk | | 1.3 | | 0.6 | 1.3 | | 0.3 | 1.4 | | 0.16 | 1.4 | | |

Table 2

Bilayer thickness (DB), its thermal contractivity ($\alpha_{DBT} = -(1/DB)(\partial DB/\partial T)\Pi$), and the contractivity as a function of hydrocarbon chain length ($\alpha_{DBn} = -(1/DB)(\partial DB/\partial n)\Pi$) for the various fluid bilayers studied. The uncertainties (+/-) shown below the main values are calculated according to Eq. (2).

| | 20 °C | | | 30 °C | | | 50 °C | | | 60 °C | | |
|--------|--------------|--------------------------------------|--------------------------------------|--------------|--------------------------------------|--------------------------------------|--------------|--------------------------------------|--------------------------------------|--------------|--------------------------------------|--------------------------------------|
| | DB [Å] | α_{DB}^T [deg ⁻¹] | α_{DB}^n [deg ⁻¹] | DB [Å] | α_{DB}^T [deg ⁻¹] | α_{DB}^n [deg ⁻¹] | DB [Å] | α_{DB}^T [deg ⁻¹] | α_{DB}^n [deg ⁻¹] | DB [Å] | α_{DB}^T [deg ⁻¹] | α_{DB}^n [deg ⁻¹] |
| DLPC | 33 0.66 | 0.00188 0.00046 | N/A | 32.6 0.65 | 0.0019 0.00047 | -0.0644 0.01049 | 31 0.62 | 0.002 0.00049 | -0.0645 0.00774 | 30.7 0.61 | 0.00202 0.0005 | -0.0619 0.0045 |
| DMPC | gel | | | 36.7 0.73 | 0.00223 0.00062 | -0.0572 0.00932 | 35.2 0.7 | 0.00233 0.00064 | -0.0568 0.00682 | 34.2 0.68 | 0.0024 0.00066 | -0.0556 0.00404 |
| DPPC | gel | | | gel | | | 39 0.78 | 0.00231 0.0021 | -0.0513 0.00615 | 38.1 0.76 | 0.00236 0.00215 | -0.0499 0.00362 |
| DSPC | gel | | | gel | | | gel | | | 42.2 0.84 | N/A | -0.045 0.00327 |
| POPC | 39.8 0.8 | 0.00136 0.00035 | -0.0251 0.0206 | 39.1 0.78 | 0.00138 0.00036 | -0.023 0.02092 | 37.9 0.76 | 0.00142 0.00037 | -0.029 0.02169 | 37.7 0.75 | 0.00143 0.00037 | -0.0212 0.02164 |
| SOPC | 40.8 0.82 | 0.00137 0.00035 | -0.0245 0.0201 | 40 0.8 | 0.0014 0.00035 | -0.0225 0.02045 | 39 0.78 | 0.00144 0.00036 | -0.0282 0.02108 | 38.5 0.77 | 0.00145 0.00037 | -0.0208 0.02119 |
| DPhyPC | 36.3 0.73 | 0.00124 0.00044 | N/A | 35.4 0.71 | 0.00127 0.00045 | N/A | 34.7 0.69 | 0.0013 0.00046 | N/A | 34.4 0.69 | 0.00131 0.00046 | N/A |

k
-0.062
-0.082
-0.09
-0.054
-0.056
-0.045

dk
0.014
0.021
0.08
0.013
0.013
0.015

| | | | | | | | | |
|----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|
| | saturated | OPC | saturated | OPC | saturated | OPC | saturated | OPC |
| k | | 1 | 2.1 | 0.9 | 2 | 1.1 | 1.9 | 0.8 |
| dk | | 0.8 | 0.3 | 0.8 | 0.2 | 0.8 | 0.1 | 0.8 |

Table 3

Hydrocarbon region thickness ($2DC$), its thermal contractivity ($\alpha_{DC}^T = -(1/DC)(\partial DC/\partial T)\Pi$), and the contractivity as a function of hydrocarbon chain length ($\alpha_{DC}^n = -(1/DC)(\partial DC/\partial n)\Pi$) for various fluid bilayers studied. The uncertainties (+/-) shown below the main values are calculated according to Eq. (2).

| | 20 °C | | | 30 °C | | | 50 °C | | | 60 °C | | | k | dk |
|--------|--------------|---|---|--------------|---|---|--------------|---|---|--------------|---|---|--------|-------|
| | $2DC$ [Å] | α_{DC}^T [deg ⁻¹] | α_{DC}^n [deg ⁻¹] | $2DC$ [Å] | α_{DC}^T [deg ⁻¹] | α_{DC}^n [deg ⁻¹] | $2DC$ [Å] | α_{DC}^T [deg ⁻¹] | α_{DC}^n [deg ⁻¹] | $2DC$ [Å] | α_{DC}^T [deg ⁻¹] | α_{DC}^n [deg ⁻¹] | | |
| DLPC | 21.9 0.44 | 0.0016 0.00053 | N/A | 21.7 0.43 | 0.00161 0.00054 | -0.0922 0.01106 | 20.8 0.42 | 0.00168 0.00056 | -0.0913 0.00663 | 20.6 0.41 | 0.0017 0.00057 | -0.0922 0.0067 | -0.035 | 0.011 |
| DMPC | gel | | | 25.7 0.51 | 0.00202 0.00074 | -0.0778 0.00934 | 24.8 0.5 | 0.0021 0.00077 | -0.0766 0.00556 | 24.1 0.48 | 0.00216 0.00079 | -0.0788 0.00573 | -0.052 | 0.018 |
| DPPC | gel | | | gel | | | 28.5 0.57 | 0.00211 0.00215 | -0.0667 0.00484 | 27.9 0.56 | 0.00215 0.00219 | -0.0681 0.00495 | -0.06 | 0.06 |
| DSPC | gel | | | gel | | | gel | | | 31.9 0.64 | N/A | -0.0596 0.00433 | | |
| POPC | 29.2 0.58 | 0.00106 0.00036 | -0.0411 0.02137 | 28.8 0.58 | 0.00108 0.00037 | -0.0382 0.0216 | 28.1 0.56 | 0.0011 0.00038 | -0.0427 0.02221 | 28 0.56 | 0.00111 0.00038 | -0.0357 0.02214 | -0.031 | 0.01 |
| SOPC | 30.4 0.61 | 0.00112 0.00035 | -0.0395 0.02053 | 29.9 0.6 | 0.00114 0.00036 | -0.0368 0.0208 | 29.3 0.59 | 0.00116 0.00036 | -0.041 0.0213 | 29 0.58 | 0.00117 0.00037 | -0.0345 0.02138 | -0.034 | 0.01 |
| DPhyPC | 27.8 0.56 | 0.00104 0.00038 | N/A | 27.2 0.54 | 0.00107 0.00039 | N/A | 26.7 0.53 | 0.00109 0.0004 | N/A | 26.6 0.53 | 0.00109 0.0004 | N/A | -0.029 | 0.01 |

| | | | | | | | | |
|----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|
| | saturated | OPC | saturated | OPC | saturated | OPC | saturated | OPC |
| k | | 1.2 | 2 | 1.1 | 1.9 | 1.2 | 1.9 | 1 |
| dk | | 0.6 | 0.2 | 0.6 | 0.1 | 0.6 | 0.1 | 0.6 |