SUPPLEMENTARY INFORMATION

Chiral water-soluble molecular capsules with amphiphilic interiors

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1. Synthesis and compounds characterization

All solvents and chemicals used were purchased from Sigma Aldrich, TCI Europe N. V., Roth, Chem Impex Inc., and Euriso-top, were of reagent grade and were used without further purification.

All reactions were carried out under the atmosphere of the air.

ECD spectra were recorded on ECD Jasco J-715 spectropolarimeter.

IR spectra were recorded on SHIMADZU IRTracer100 spectrophotometer.

High-resolution mass spectra were recorded on SYNAPT spectrometer.

Optical rotations were recorded on Jasco P-2000 polarimeter.

**Synthesis of (L-GluR)₂**

Resorcin[4]arene \( \mathbf{R} \)\(^1\) (2.16 g, 3 mmol), L-glutamic acid (2.21 g 15 mmol), and formaldehyde (40 % aqueous solution, 0.36 ml, 12 mmol) were added to the mixture of DMF and water (1:3, 80 ml). The solution was heated to 60°C and stirred at that temperature for 3 days. After cooling the reaction was evaporated and the precipitate was washed with water, acetonitrile, again with water, and dried, yield: 50%.

\(^1\)H NMR (600 MHz, D\(_2\)O) δ 7.03 (s, 1H); 4.36 (d, \( J = 14.7 \text{ Hz}, 1\text{H} \); 4.27 (t, \( J = 7.8 \text{ Hz}, 1\text{H} \); 4.17 (d, \( J = 14.6 \text{ Hz}, 1\text{H} \); 4.01 (m, 1H); 3.48 (t, \( J = 6.6 \text{ Hz}, 2\text{H} \); 2.36 (m, 2H); 2.19 (m, 1H); 2.16 (m, 1H); 2.01 (m, 2H); 1.80 (m, 1H); 1.36 (t, \( J = 7.5 \text{ Hz}, 2\text{H} \); 13C NMR (150 MHz, D\(_2\)O) δ 179.5; 178.9; 150.2; 150.1; 125.4; 124.2; 112.1; 63.0; 61.6; 61.5; 36.2; 34.3; 29.9; 29.8; 29.3; 23.1. IR (KBr): ν/cm\(^{-1}\) 3315; 2942; 1874; 1730; 1644; 1230; 658. Optical rotation: \([\alpha]_D = 18.0 \text{ (c = 9.99 mg / ml, H}_2\text{O, pH = 4.8, 22.0 °C)}\). HRMS (ESI-TOF): calcd m/z for C\(_{64}\)H\(_{75}\)N\(_4\)O\(_{24}\) [M-H]\(^-\) 1283.4771 found 1283.4757.

**Synthesis of (L-ArgR)₂**

L-Arginine monohydrochloride (0.44 g 2.01 mmol) was dissolved in water (pH 3.5, 5 ml). Further, methanol (5 ml), resorcin[4]arene R (0.30 g, 0.41 mmol) and formaldehyde (40 % aqueous solution, 0.12 ml, 1.64 mmol) were added. The solution was heated to 60°C and stirred at that temperature for 1 day. After cooling the reaction was evaporated to dryness and the product was purified on the Sephadex LH-20 column, yield: 47%.

\(^1\)H NMR (600 MHz, D\(_2\)O) δ 7.26 (s, 1H); 4.27 (t, \( J = 7.8 \text{ Hz}, 1\text{H} \); 4.15 (d, \( J = 13.2 \text{ Hz}, 1\text{H} \); 4.04 (d, \( J = 13.1 \text{ Hz}, 1\text{H} \)); 3.48 (t, \( J = 6.3 \text{ Hz}, 2\text{H} \)); 3.41 (t, \( J = 6.0 \text{ Hz}, 1\text{H} \)); 2.86 (t, \( J = 7.2 \text{ Hz}, 2\text{H} \)); 2.14 (m, 2H); 1.68 (m, 2H); 1.34 (bm, 2H); 1.30 (m, 2H); 13C NMR (150 MHz, D\(_2\)O) δ 173.3; 156.6; 151.0; 151.0; 126.5; 108.3; 61.5; 60.8; 41.1; 40.3; 34.2; 29.8; 29.3; 23.8. IR (KBr): ν/cm\(^{-1}\) 3346; 3177; 2938; 2870; 1634; 1472; 1400; 1057. Optical rotation: \([\alpha]_D = 11.5 \text{ (c = 10.00 mg / ml, H}_2\text{O, pH = 4.8, 22.6 °C)}\). HRMS (ESI-TOF): calcd m/z for C\(_{68}\)H\(_{105}\)N\(_{16}\)O\(_{24}\) [M-H]\(^+\) 1465.7691 found 1465.7704.

**Synthesis of (D-GluR+L-ArgR)**

To a water solution of (D-GluR)\(_2\) (5 mg, 2 µmol, in 2 ml of water at pH 5.0) a water solution of (L-ArgR)\(_2\) (5 mg, 1.5 µmol, in 2 ml of water at pH 5.0) was added. The precipitate was formed, which was washed with water (2 x 5 ml) and dried. The products was obtained in 82 %. IR (KBr): ν/cm\(^{-1}\) 3377; 2940; 2870; 1643; 1464; 1408; 1057; 835. Optical rotation: \([\alpha]_D = 111.7 \text{ (c = 10.00 mg / ml, H}_2\text{O, pH = 9.0, 22.6 °C)}\).
Synthesis of (L-GluR+L-ArgR)

To a water solution of (D-GluR)₂ (5 mg, 2 µmol, in 2 ml of water at pH 5.0) a water solution of (L-ArgR)₂ (5 mg, 1.5 µmol, in 2 ml of water at pH 5.0) was added. The precipitate was formed, which was washed with water (2 x 5 ml) and dried. The product was obtained in 80 %. IR (KBr): ν/cm⁻¹ 3381; 2938; 2868; 1645; 1458; 1055; 835. Optical rotation: [α]_D = 69.0 (c = 10.08 mg / ml, H₂O, pH = 9.0, 22.7 °C).
2. NMR spectra

2.1. NMR spectra of capsules

Figure S1. $^1$H NMR spectrum of (L-GluR)$_2$ (600 MHz, 298 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S2. $^{13}$C NMR spectrum of (L-GluR)$_2$ (150 MHz, 298 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S3. HSQC spectrum of \((\text{L-GluR})_2\) (600 MHz, 298 K, pD 4.8, D$_2$O, NaOD / DCI).

Figure S4. HMBC spectrum of \((\text{L-GluR})_2\) (600 MHz, 298 K, pD 11.0, D$_2$O, NaOD / DCI).
Figure S5. COSY spectrum of \((\text{L-GluR})_2\) (600 MHz, 298 K, pD 4.8, D₂O, NaOD / DCl).

Figure S6. ROESY spectrum of \((\text{L-GluR})_2\) (600 MHz, 298 K, pD 4.8, D₂O, NaOD / DCl).
Figure S7. $^1$H NMR spectrum of (L-ArgR)$_2$ (600 MHz, 298 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S8. $^{13}$C NMR spectrum of (L-ArgR)$_2$ (150 MHz, 298 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S9. HSQC spectrum of \((L{-}\text{ArgR})_2\) (600 MHz, 298 K, pD 4.8, D_2O, NaOD / DCl).

Figure S10. HMBC spectrum of \((L{-}\text{ArgR})_2\) (600 MHz, 298 K, pD 4.8, D_2O, NaOD / DCl).
Figure S11. COSY spectrum of (L-ArgR)\textsubscript{2} (600 MHz, 298 K, pD 4.8, D\textsubscript{2}O, NaOD / DCl).

Figure S12. ROESY spectrum of (L-ArgR)\textsubscript{2} (600 MHz, 298 K, pD 4.8, D\textsubscript{2}O, NaOD / DCl).
Figure S13. $^1$H NMR spectrum of D-GluR-L-ArgR (600 MHz, 298 K, pD 13.0, D$_2$O, NaOD / DCI).

Figure S14. $^1$H NMR spectrum of L-GluR-L-ArgR (600 MHz, 298 K, pD 13.0, D$_2$O, NaOD / DCI).
2.2. DOSY experiments

Figure S15. $^1$H NMR and DOSY spectra of L-GluR (C = 20 mM) (600 MHz, 298 K, DMSO).
Figure S16. $^1$H NMR and DOSY spectra of (L-GluR)$_2$ (C = 10 mM) at different pD a) 13.3 b) 12.0 c) 10.3 d) 9.0 e) 7.2 f) 5.5 (600 MHz, 298 K, D$_2$O, NaOD / DCI).
Figure S17. $^1$H NMR and DOSY spectra of (L-ArgR)$_2$ (C = 10 mM) at different pH a) 1.9 b) 5.0 c) 8.0 d) 10.3 e) 12.0 f) 13.3 (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S18. $^1$H NMR and DOSY spectra of L-ArgR-D-GluR (C = 10 mM) at different pD a) 9.0 b) 10.0 c) 11.0 d) 12.0 e) 13.0 (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S19. $^1$H NMR and DOSY spectra of L-ArgR-L-GluR (C = 10 mM) at different pD a) 9.0 b) 10.0 c) 11.0 d) 12.0 e) 13.0 (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S20. $^1$H NMR and DOSY spectra of (L-GluR)$_2$ at pD 5.0 at different concentration a) 0.37 mM b) 1.8 mM c) 3.7 mM d) 10 mM e) 14.8 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S21. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1, (C = 10 mM) in (L-GluR)$_2$ at pD 9.0 at different concentrations a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCI).
Figure S22. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1, (C = 10 mM) in (D-GluR)$_2$ at pD 9.0 at different concentration in a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S23. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1. (C = 10 mM) in D-GluR-L-GluR at pD 9.0 at different concentration a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S24. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1, (C = 10 mM) in (L-Arg)$_2$ at pH 9.0 at different concentration a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S25. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1, (C = 10 mM) in D-GluR-L-ArgR at pD 9.0 at different concentration a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S26. $^1$H NMR and DOSY spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1, (C = 10 mM) in L-Glu-L-Arg at pH 9.0 at different concentration a) 0.37 mM b) 1.9 mM c) 3.7 mM d) 10 mM (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S27. 1H NMR and DOSY spectra for complexation of benzaldehyde 2 (saturation) in D$_2$O at pD 9.0 at different concentrations of (L-GluR)$_2$: a) 0.37 mM (integral-based ratio 2 : (L-GluR)$_2$ 1 : 0.05); b) 1.9 mM (integral-based ratio 2 : (L-GluR)$_2$ 1 : 0.1); c) 3.7 mM (integral-based ratio 2 : (L-GluR)$_2$ 1 : 0.2); d) 10.0 mM (integral-based ratio 2 : (L-GluR)$_2$ 1 : 0.6) (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S28. $^1$H NMR and DOSY spectra for complexation of benzaldehyde, 2, (saturation) in D$_2$O at pD 9.0 at different concentrations of D-GluR-L-GluR: a) 0.37 mM (integral-based ratio 2 : D-GluR-L-GluR 1 : 0.03); b) 1.9 mM (integral-based ratio 2 : D-GluR-L-GluR 1 : 0.1); c) 3.7 mM (integral-based ratio 2 : D-GluR-L-GluR 1 : 0.3); d) 10.0 mM (integral-based ratio 2 : D-GluR-L-GluR 1 : 0.6) (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S29. $^1$H NMR and DOSY spectra for complexation of benzaldehyde, 2, (saturation) in D$_2$O at pD 9.0 at different concentrations of (L-ArgR)$_2$: a) 0.33 mM (integral-based ratio 2 : (L-ArgR)$_2$ 1 : 0.04); b) 1.6 mM (integral-based ratio 2 : (L-ArgR)$_2$ 1 : 0.4); c) 3.3 mM (integral-based ratio 2 : (L-ArgR)$_2$ 1 : 0.7); d) 9.0 mM (integral-based ratio 2 : (L-ArgR)$_2$ 1 : 2.0) (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S30. $^1$H NMR and DOSY spectra for complexation of benzaldehyde 2 (saturation) in D$_2$O at pD 9.0 at different concentrations of D-GluR-L-ArgR: a) 0.35 mM (integral-based ratio 2 : D-GluR-L-ArgR 1:0.04); b) 1.7 mM (integral-based ratio 2 : D-GluR-L-ArgR 1 : 0.3); c) 3.5 mM (integral-based ratio 2 : L-ArgR-D-GluR 1 : 1.4); d) 9.6 mM (integral-based ratio 2 : D-GluR-L-ArgR 1 : 2.5) (600 MHz, 298 K, D$_2$O, NaOD / DCl).
Figure S31. $^1$H NMR and DOSY spectra for complexation of benzaldehyde, 2, (saturation) in D$_2$O at pD 9.0 at different concentrations of L-GluR-L-ArgR: a) 0.35 mM (integral-based ratio 2 : L-ArgR-L-GluR 1 : 0.04); b) 1.8 mM (integral-based ratio 2 : L-GluR-L-ArgR 1 : 0.2); c) 3.5 mM (integral-based ratio 2 : L-GluR-L-ArgR 1 : 0.5); d) 9.5 mM (integral-based ratio 2 : L-GluR-L-ArgR 1 : 1.1) (600 MHz, 298 K, D$_2$O, NaOD / DCl).
2.3. Complexation of guests

Figure S32. $^1$H NMR spectra for complexation of (1S,2S)-trans-1,2-cyclohexanediol 1 in (GluR)$_2$ (1 : 1 guest : host ratio) and the titration curves (400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S33. Job plot of (L-GluR)₂ and 1 (400 MHz, 303 K, pD 4.8, D₂O, NaOD / DCl).

Figure S34. ¹H NMR spectra for complexation of benzaldehyde 2 in (L-GluR)₂ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D₂O, NaOD / DCl).
Figure S35. $^1$H NMR spectra for complexation of mandelic acid 3 in (L-ArgR)$_2$ (1 : 1 guest : host ratio, (S)-3 middle, (R)-3 bottom) and the titration curves (400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

\[
(L\text{-ArgR})_2 + 3 \xrightleftharpoons[K_1]{K_2} (L\text{-ArgR})_23 \\
(L\text{-ArgR})_23 + 3 \xrightleftharpoons[K_2]{K_1} (L\text{-ArgR})_2(3)_2
\]

\[
\begin{array}{cccc}
K_1 & \sigma_1 & K_2 & \sigma_2 \\
4.78 & 0.02 & 1.85 & 0.02 \\
4.34 & 0.03 & 1.77 & 0.03 \\
\end{array}
\]

\textbf{Figure S36.} $^1$H NMR spectra of a) mandelic acid 3 b) mandelic acid 3 in L-GluR (1 : 1 guest : host ratio) (400 MHz, 303 K, DMSO).
Figure S37. $^1$H NMR spectra for complexation of (R)-mandelic acid (R)-3 in (GluR)$_2$ (1 : 1 guest : host ratio, (D-GluR)$_2$ middle, (L-GluR)$_2$ bottom) and the titration curves (400 MHz, 303 K, D$_2$O, pD 4.8, NaOD / DCl).
Figure S38. $^1$H NMR spectra for complexation of (R)-mandelic acid (R)-3 in (L-GluR)$_2$ (1 : 1 guest : host ratio) at various pD: a) (R)-3 b) (L-GluR)$_2$ + (R)-3 pD 4.5 c) (L-GluR)$_2$ + (R)-3 pD 5.4 d) (L-GluR)$_2$ + (R)-3 pD 9.1 e) (L-GluR)$_2$ + (R)-3 pD 12.0 (400 MHz, 303 K, D$_2$O, NaOD / DCl).
Figure S39. $^1$H NMR spectra for complexation of phenylalanine 4 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S40. $^1$H NMR spectra for complexation of N,N-dimethylphenylalanine 5 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S41. $^1$H NMR spectra for complexation of cinnamic acid 6 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S42. $^1$H NMR spectra for complexation of epoxycyclohexane 7 in (L-GluR)$_2$: a) epoxycyclohexane; b) epoxycyclohexane + (L-GluR)$_2$ at pD 4.7 c) epoxycyclohexane + (L-GluR)$_2$ at pD 7.0 d) epoxycyclohexane + (L-GluR)$_2$ at pD 8.5 e) epoxycyclohexane + (L-GluR)$_2$ at pD 12.0 (1:1 guest : host ratio, 400 MHz, 303 K, D$_2$O, NaOD / DCl).
Figure S43. Partial ROESY spectrum of epoxycyclohexane in (L-GluR)₂ (600 MHz, 298 K, pD 4.8, D₂O, NaOD / DCl).

Figure S44. ¹H NMR spectra for complexation of epichlorohydrin 8 in (L-GluR)₂ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D₂O, NaOD / DCl).
Figure S45. $^1$H NMR spectra for complexation of glycidol 9 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S46. $^1$H NMR spectra for complexation of cyclohexanone 10 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S47. $^1$H NMR spectra for complexation of caprolactone 11 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S48. $^1$H NMR spectra for complexation of caprolactam 12 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCI).

Figure S49. $^1$H NMR spectra for complexation of (1S,2S)-2-aminocyclohexanecarboxylic acid 13 in (GluR)$_2$ (1 : 1 guest : host ratio) and the titration curves (400 MHz, 303 K, pD 4.8, D$_2$O).
Figure S50. $^1$H NMR spectra for complexation of L-carnitine 14 in (GluR)$_2$ (1 : 1 guest : host ratio) and the titration curves (400 MHz, 303 K, pD 4.8, D$_2$O).

\[
\begin{align*}
(GluR)_2 + 14 & \rightleftharpoons (GluR)_2 14 \\
(GluR)_2 14 + 14 & \rightleftharpoons (GluR)_2(14)_2
\end{align*}
\]

\[
K_1 \quad \sigma_1 \quad K_2 \quad \sigma_2
\]

\[
\begin{align*}
(D-\text{GluR})_2 + (R)-14 &= 4.77 \quad 0.03 \quad 1.54 \quad 0.03 \\
(L-\text{GluR})_2 + (R)-14 &= 4.99 \quad 0.02 \quad 1.43 \quad 0.02
\end{align*}
\]

Figure S51. $^1$H NMR spectra for complexation of trimethylamine 15 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S52. $^1$H NMR spectra for complexation of tertamethylammonium salt 16 in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).

Figure S53. $^1$H NMR spectra for complexation of mannitol in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
Figure S54. $^1$H NMR spectra for complexation of glucose in (L-GluR)$_2$ (1 : 1 guest : host ratio, 400 MHz, 303 K, pD 4.8, D$_2$O, NaOD / DCl).
3. UV and ECD spectra

**Figure S55.** pH-dependent a) ECD and b) UV spectra of L-GluR (C = 3.1 mM concentration calculated per cavitand, water, pH set by NaOH / HCl).

**Figure S56.** a) ECD and b) UV spectra of titration of L-GluR (concentration calculated per cavitand, water, pH = 11.90 pH set by NaOH / HCl).
Figure S57. pH-dependent a) ECD and b) UV spectra of L-ArgR (C = 3.1 mM concentration calculated per cavitand, water, pH set by NaOH / HCl).

Figure S58. a) ECD and b) UV spectra of titration of L-ArgR (concentration calculated per cavitand, water, pH = 11.90 pH set by NaOH / HCl).
**Figure S59.** pH-dependent a) ECD and b) UV spectra of D-GluR-D-ArgR (solid lines – experimental spectra, dashed lines – a weighted mathematical sum of the components at given pH) ($C_{(L-ArgR)} = 1.85$ mM, $C_{(D-GluR)} = 1.85$ mM, water, pH set by NaOH / HCl).

**Figure S60.** pH-dependent a) ECD and b) UV spectra of L-GluR-L-ArgR (solid lines – experimental spectra, dashed lines – a weighted mathematical sum of the components at given pH) ($C_{(L-ArgR)} = 1.85$ mM, $C_{(L-GluR)} = 1.85$ mM, water, pH set by NaOH / HCl).
Figure S61. Calculated a) ECD and b) UV spectra of \((M)-(N-4H)^4^-\) and \(N\).
4. IR spectra

*Figure S62.* IR spectrum of L-GluR (KBr).

*Figure S63.* IR spectrum of L-ArgR (KBr).
Figure S64. IR spectrum of D-GluR-L-ArgR (KBr).

Figure S65. IR spectrum of L-GluR-L-ArgR (KBr).
5. MS spectra

Figure S66 TOF-ESI of L-GluR.

Figure S67. TOF-ESI of L-ArgR.
6. Calculations of the size of the capsule

\[ \bar{x}_r = \frac{20.601 + 20.686 + 13.450}{6} = 9.12 \text{ Å} \]

**Figure S68.** Approximation of the average size of L-GluR.
\[ \bar{x}_r = \frac{23.421 + 20.101 + 21.540}{6} = 10.8 \ \text{Å} \]

**Figure S69.** Approximation of the average size of L-GluR-L-ArgR.

[1] Gibb, B. C., Chapman, R. G., and Sherman, J. C. (1996). Synthesis of Hydroxyl-Footed Cavitands. *J. Org. Chem.*, 61, 1505-1509. doi.org/10.1021/jo951633c