Supporting Information

Structure-Property Relationship in Laponite Materials: From Wigner Glasses to Strong Self-Healing Hydrogels Formed by Non-Covalent Interactions

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Table S1. Assignment of the vibrational modes observed in the FTIR spectra of Laponite, **HN5**, **HNP5**, **HN5NaCl**, **HN5CaCl$_2$**, and **HN5CeCl$_3$**.

Compound	**-OH stretching of lattice hydroxyl group (cm^{-1})**	**-OH stretching from free H_2O (cm^{-1})**	**H-OH bending (cm^{-1})**	**Si-O streching (cm^{-1})**
Laponite	3630	3410	1635	960
HN5	3630	3310	1635	1000
HNP5	3630	3310	1635	1000
HN5NaCl	3630	3310	1635	1000
$HN5CaCl_2$	3630	3310	1635	1005
$HN5CeCl_3$	3630	3310	1635	1005

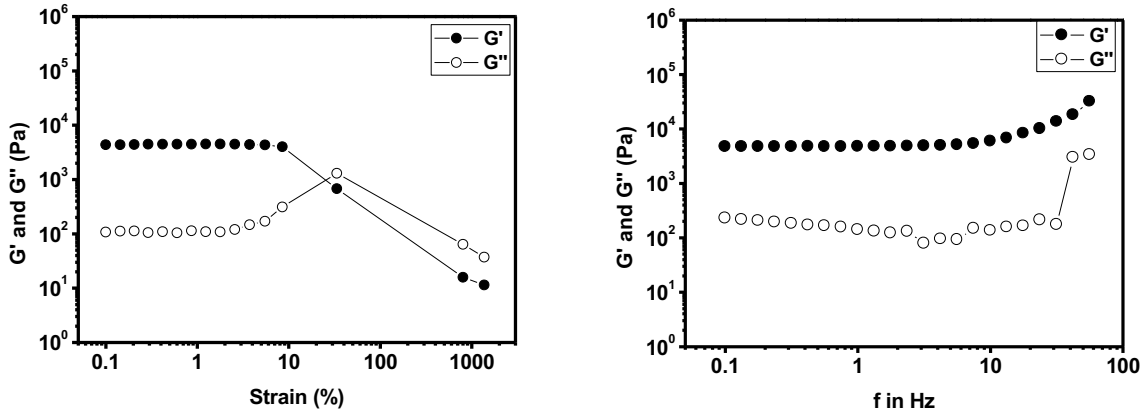

Figure S.I.1. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5**.

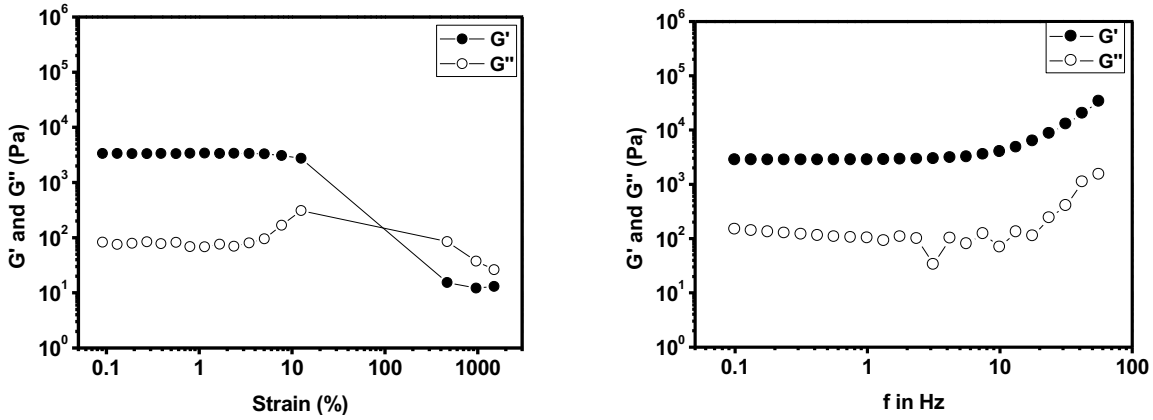

Figure S.I.2. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN4**.

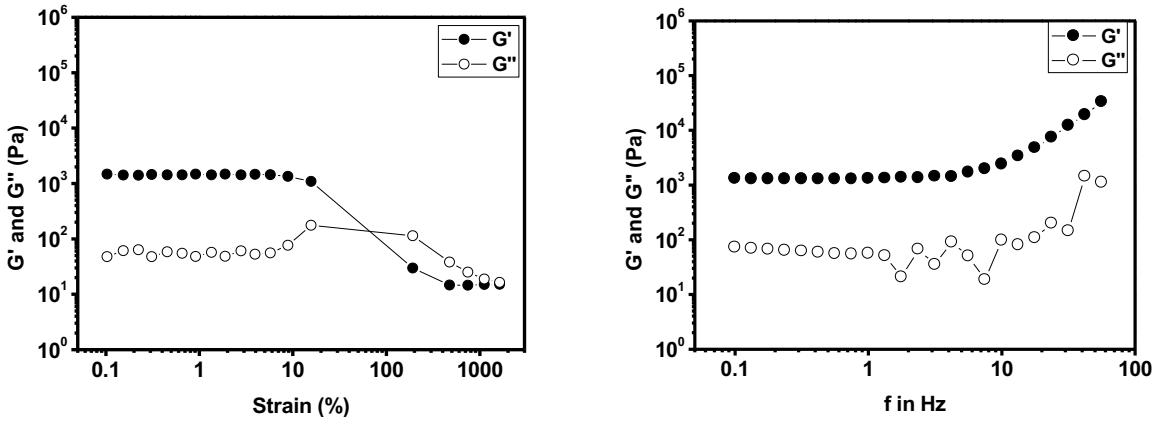

Figure S.I.3. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN3**.

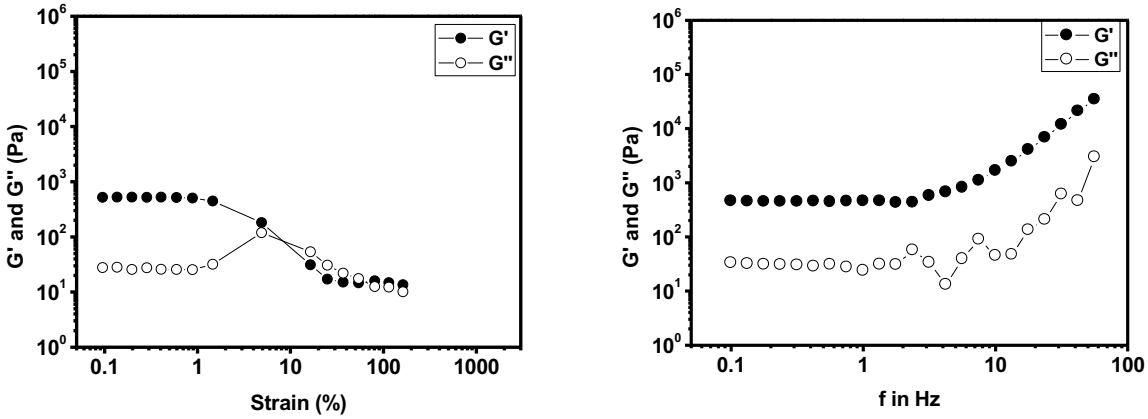

Figure S.I.4. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN2**.

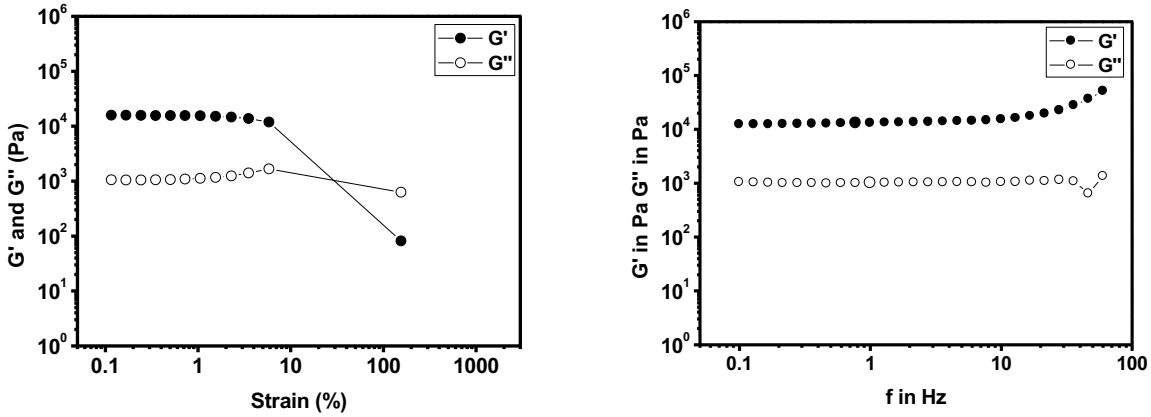

Figure S.I.5. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**.

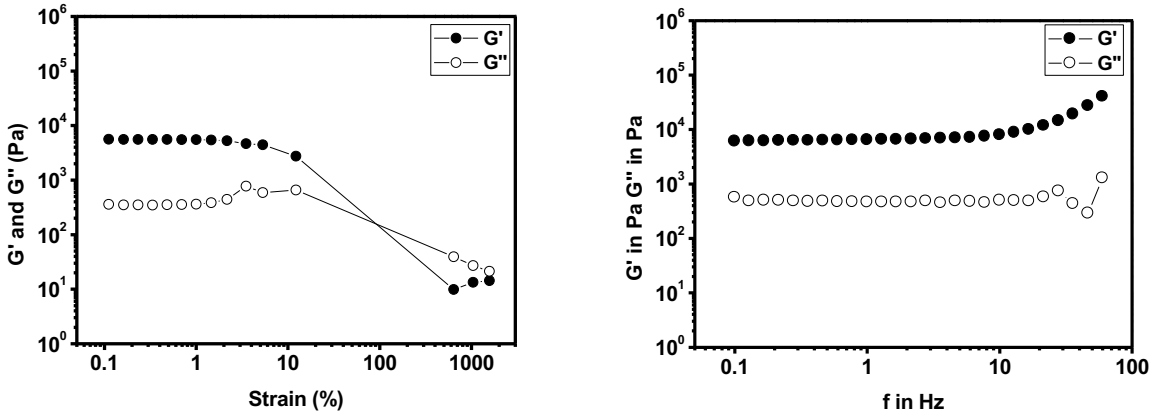

Figure S.I.6. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN4NaCl**.

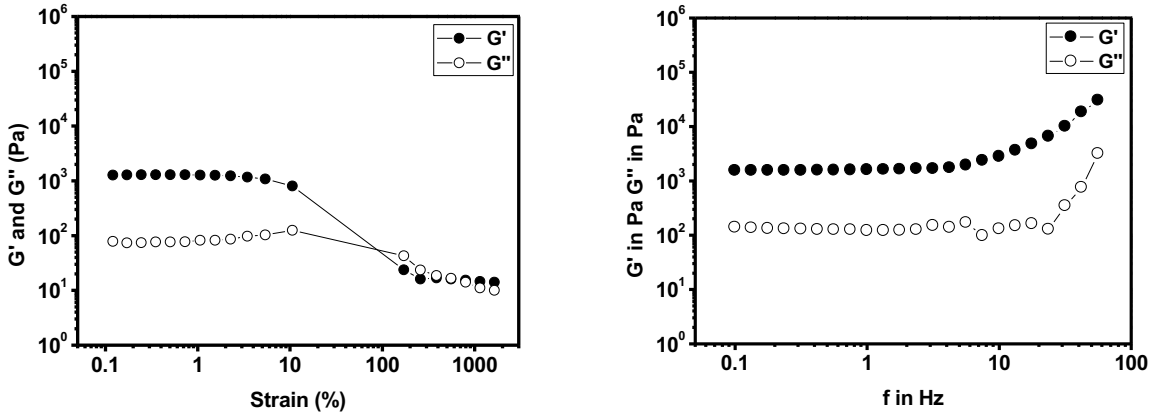

Figure S.I.7. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN3NaCl**.

Variation of polymer

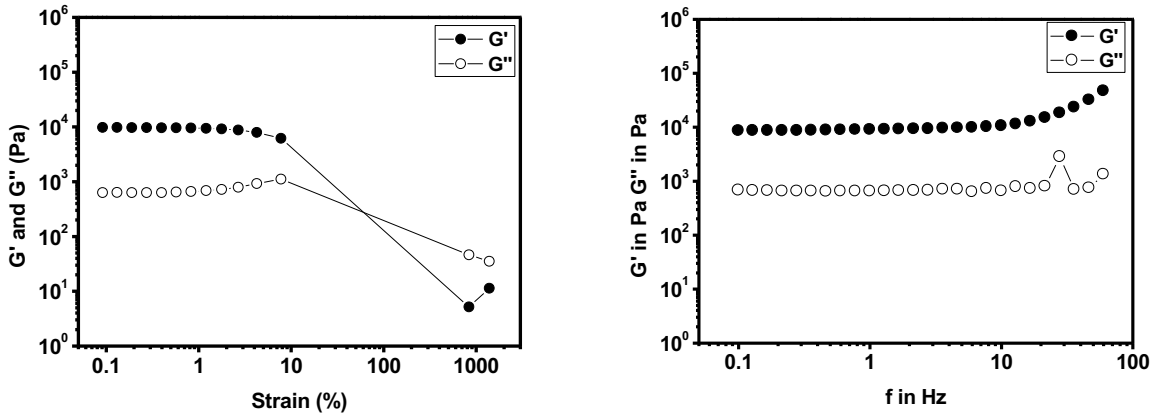

Figure S.I.8. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 1 mg of polyacrylate.

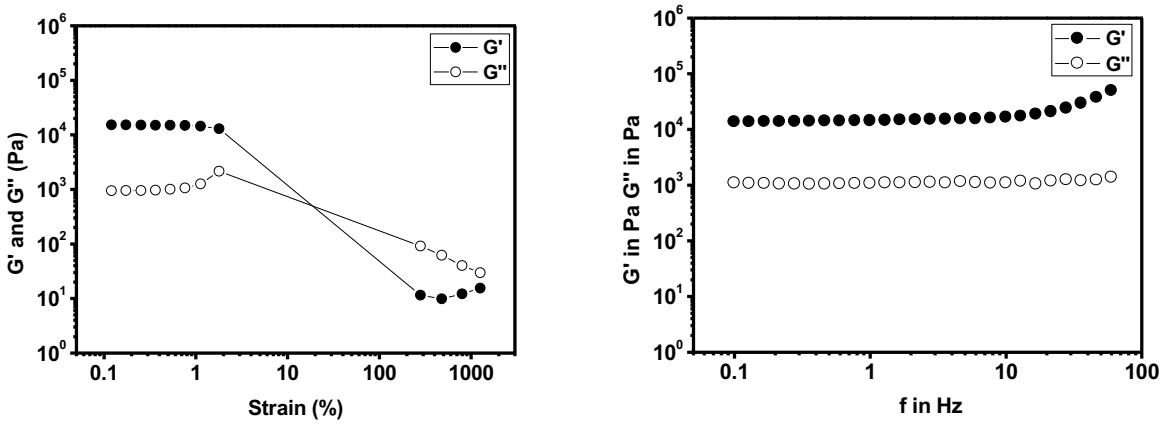

Figure S.I.9. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 2.5 mg of polyacrylate.

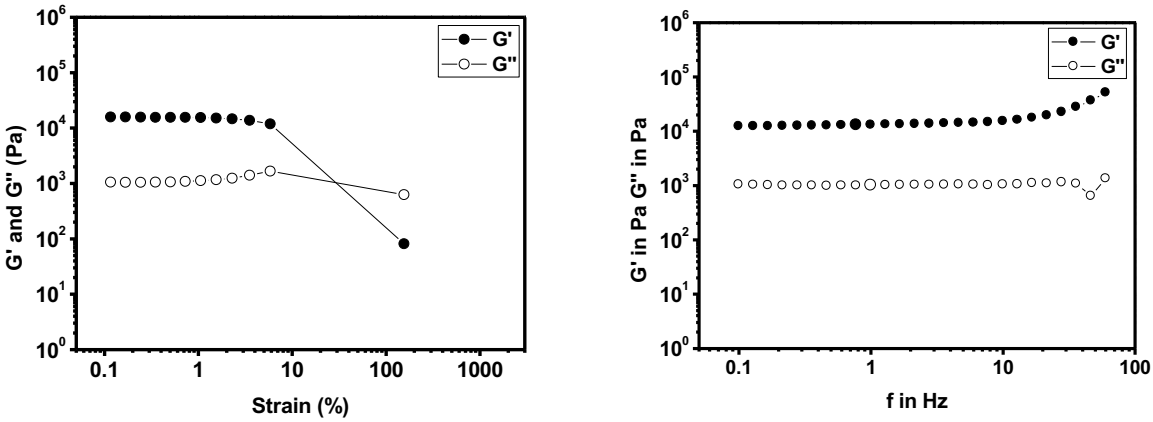

Figure S.I.10. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 5 mg of polyacrylate.

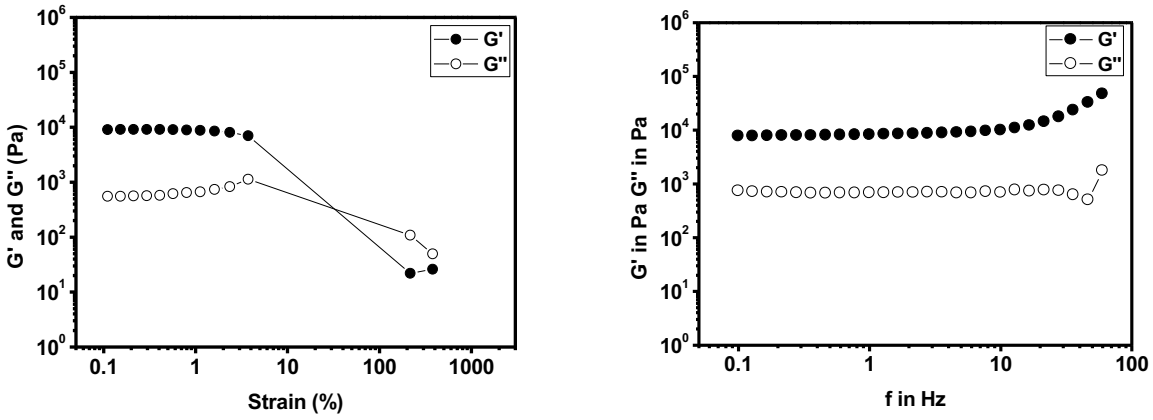

Figure S.I.11. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 10 mg of polyacrylate.

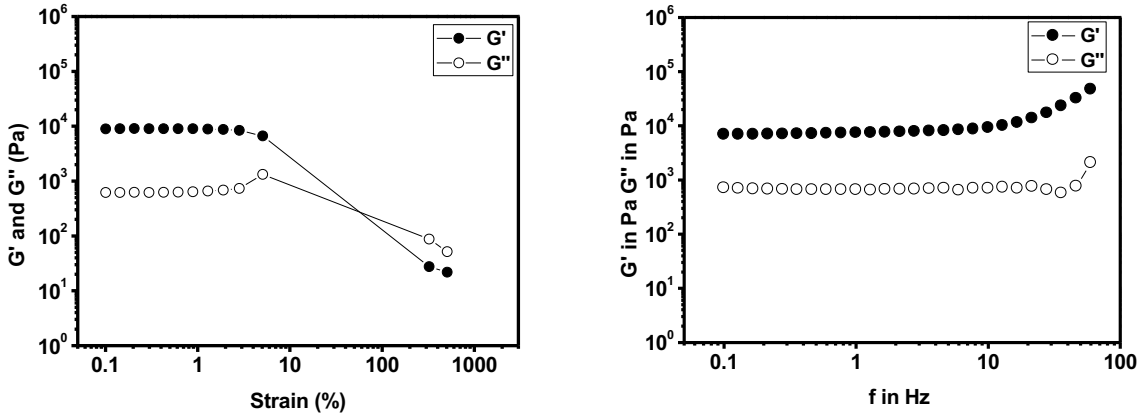

Figure S.I.12. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 15 mg of polyacrylate.

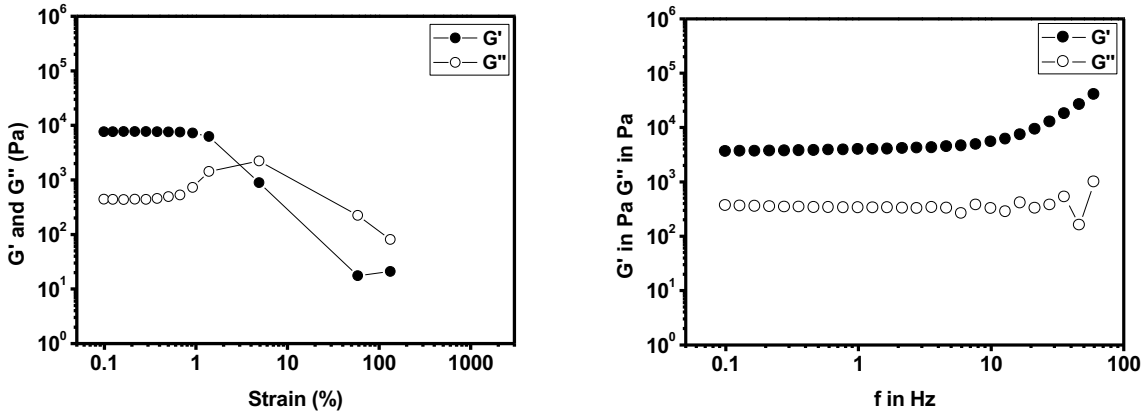

Figure S.I.13. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 20 mg of polyacrylate.

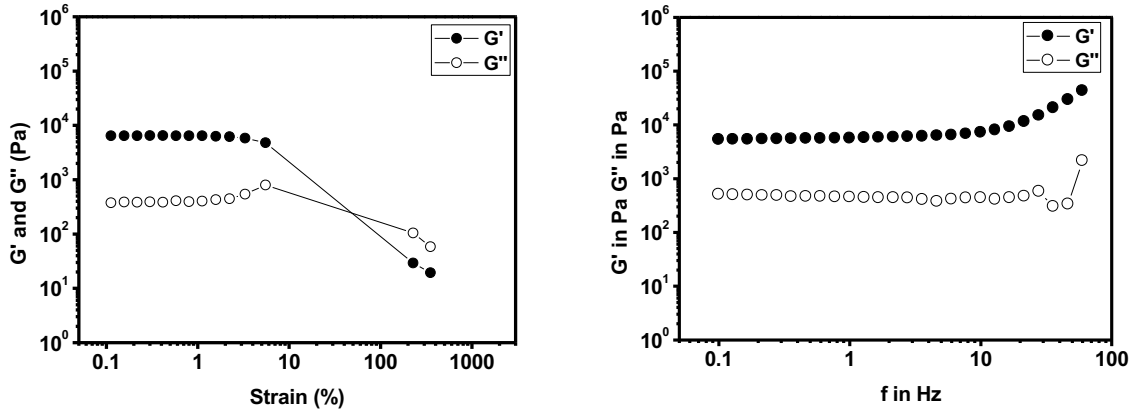

Figure S.I.14. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 25 mg of polyacrylate.

Variation of PBS

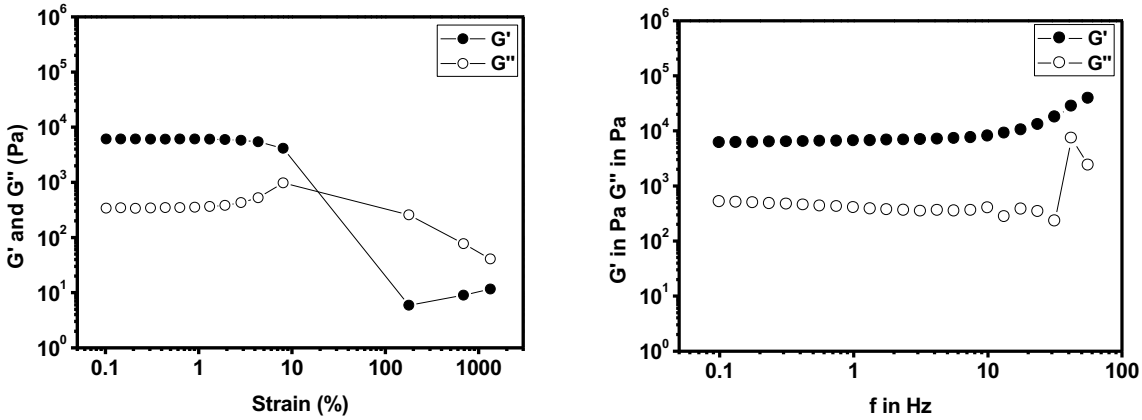

Figure S.I.15. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.01 M PBS.

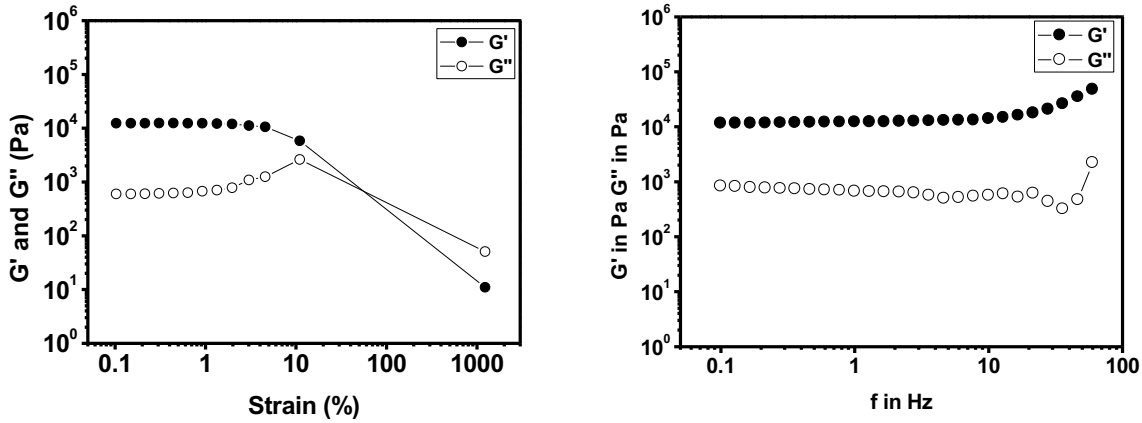

Figure S.I.16. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.02 M PBS.

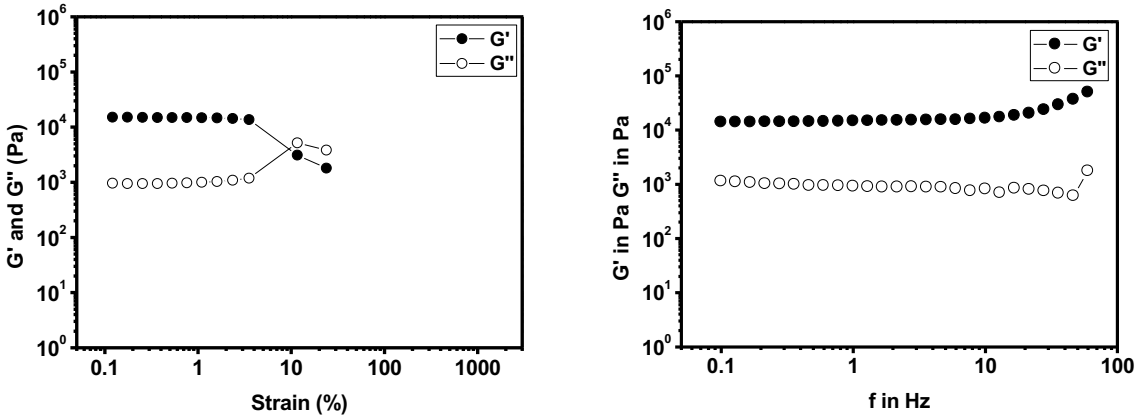

Figure S.I.17. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.03 M PBS.

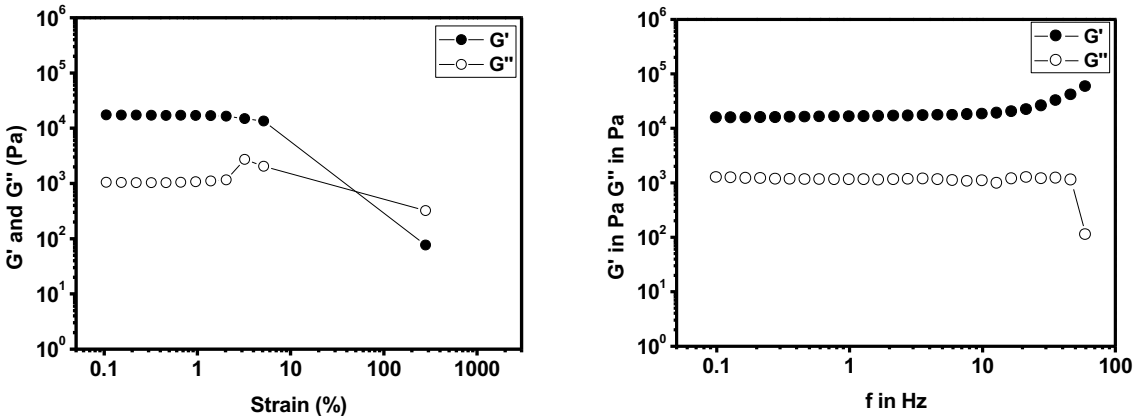

Figure S.I.18. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.04 M PBS.

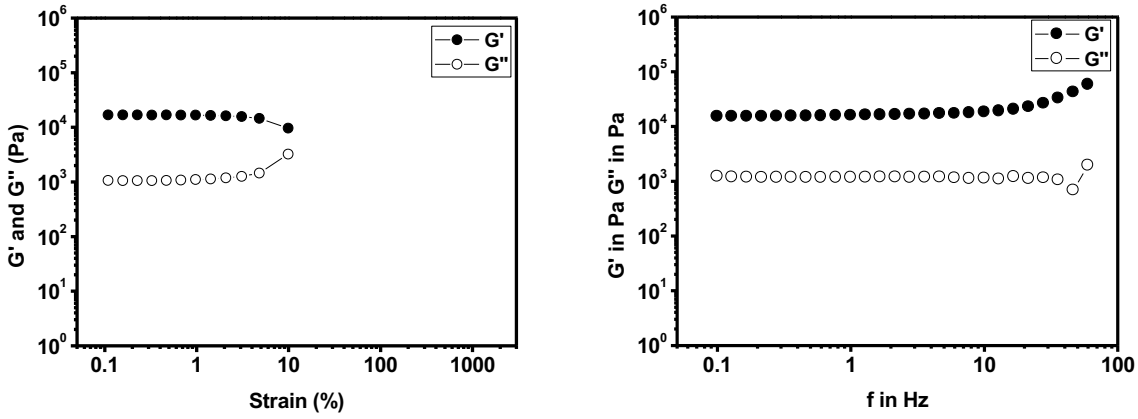

Figure S.I.19. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.05 M PBS.

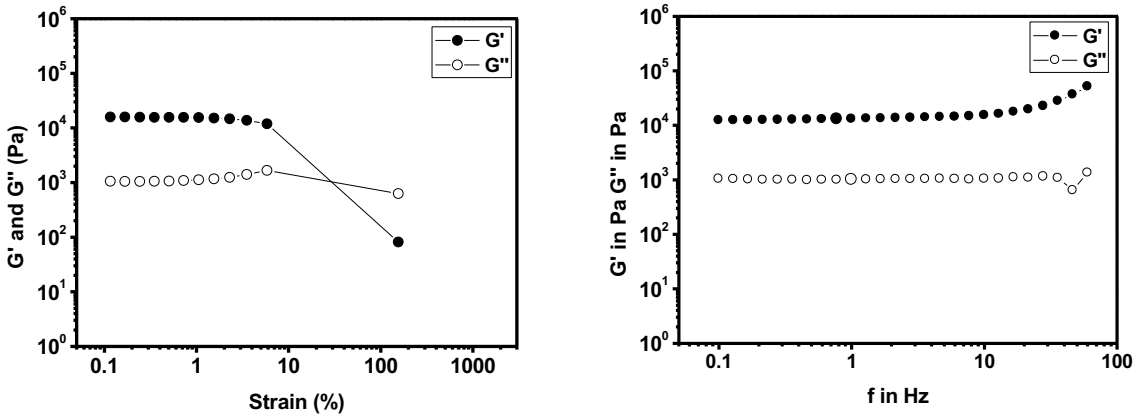

Figure S.I.20. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.1 M PBS.

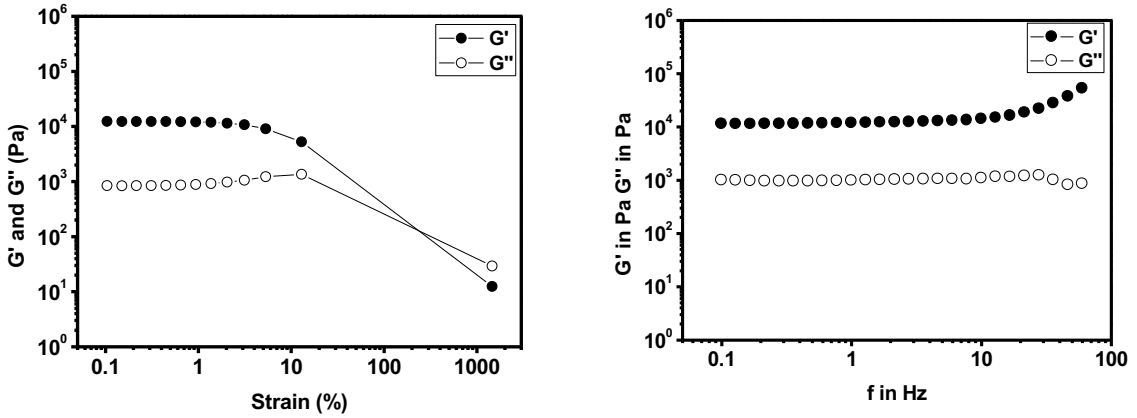

Figure S.I.21. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.2 M PBS.

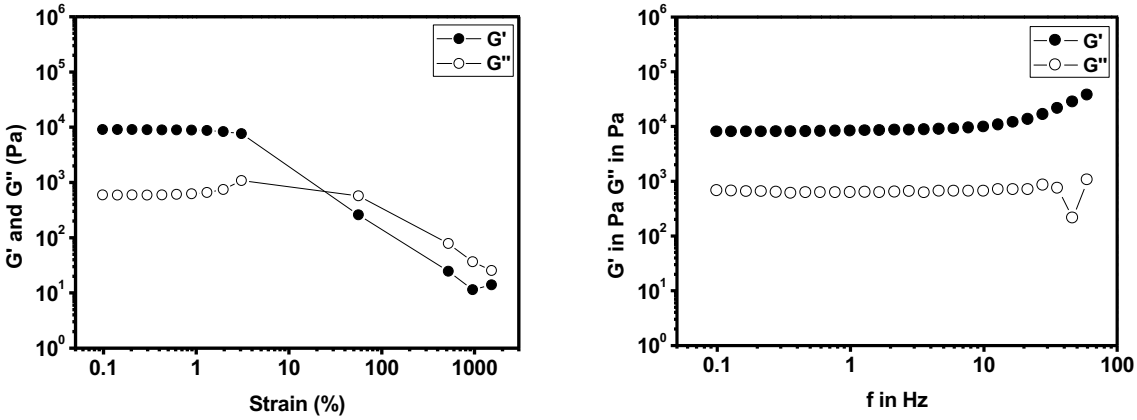

Figure S.I.22. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.3 M PBS.

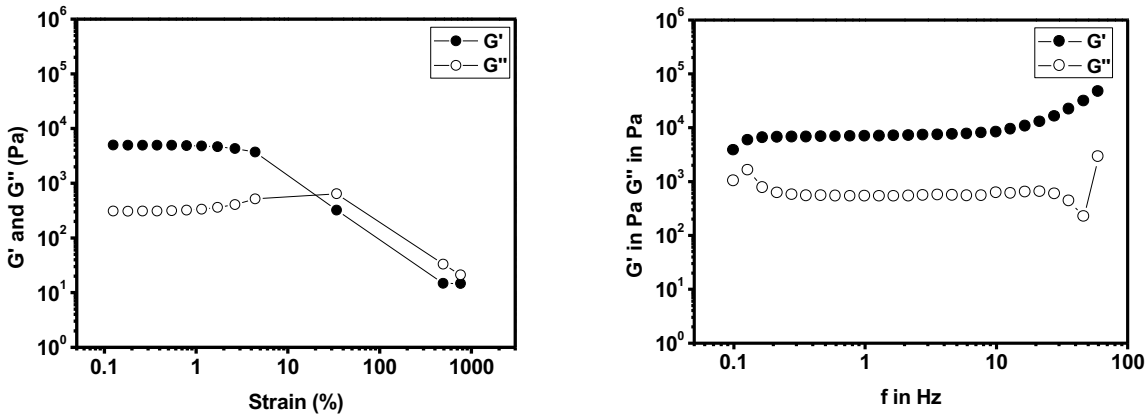

Figure S.I.23. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5PBS**, using 0.4 M PBS.

Variation of NaCl

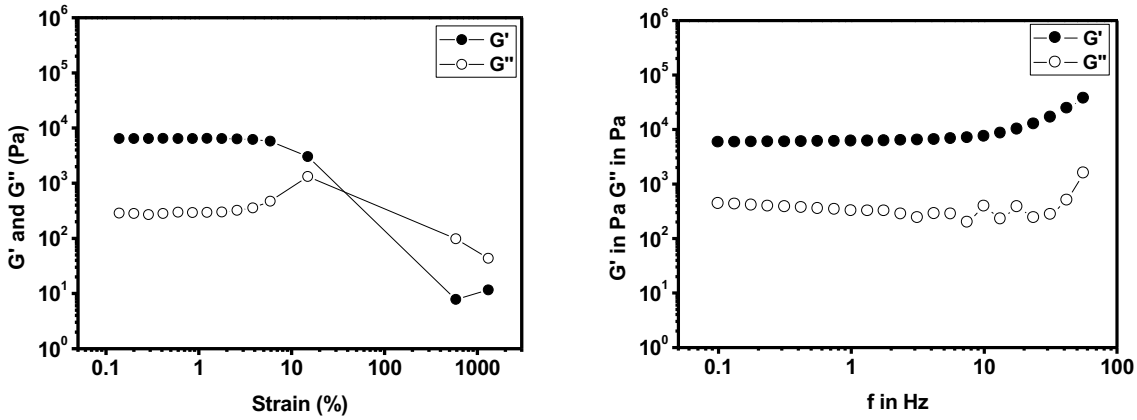

Figure S.I.24. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.01 M NaCl.

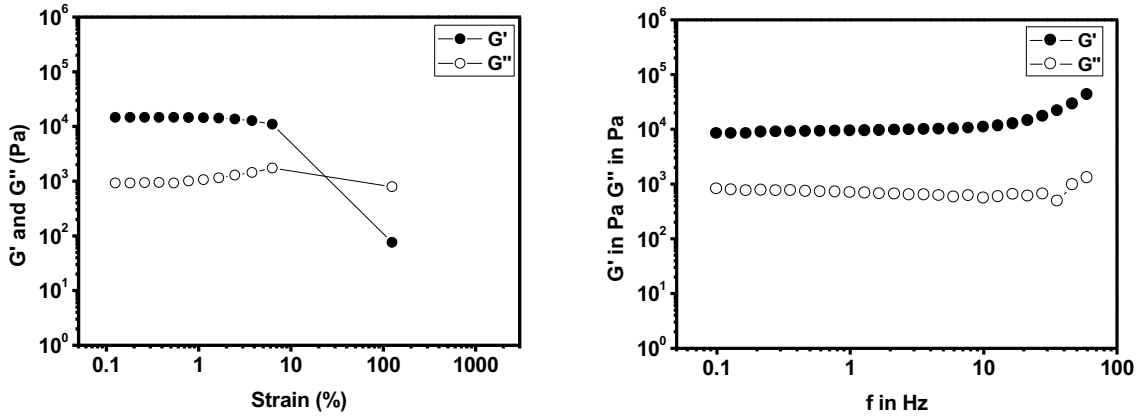

Figure S.I.25. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.03 M NaCl.

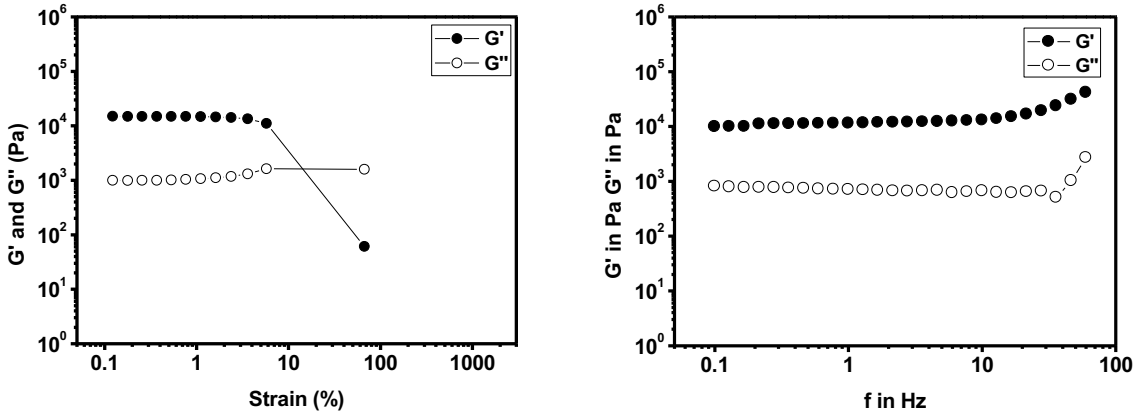

Figure S.I.26. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.04 M NaCl.

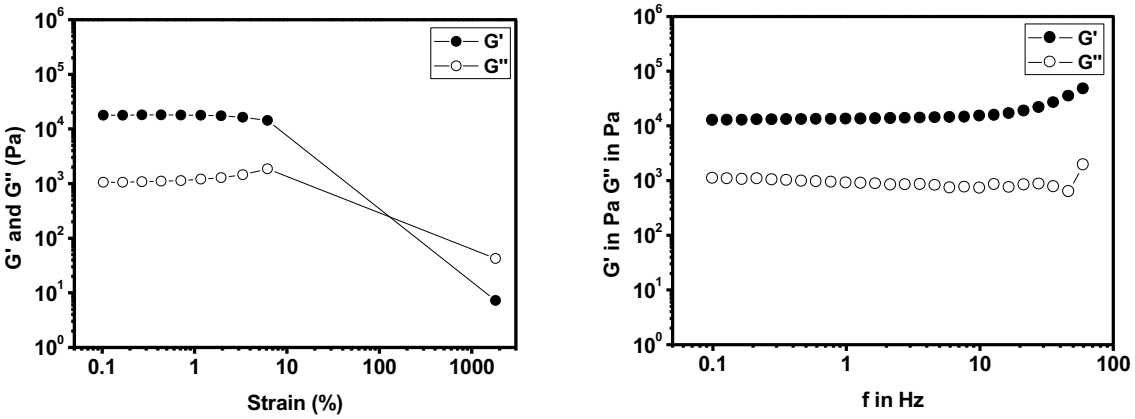

Figure S.I.27. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.05 M NaCl.

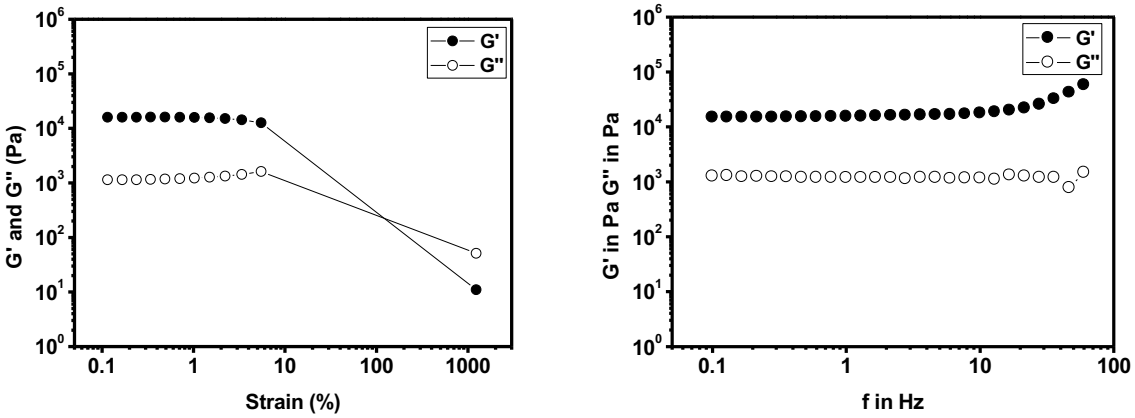

Figure S.I.28. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.1 M NaCl.

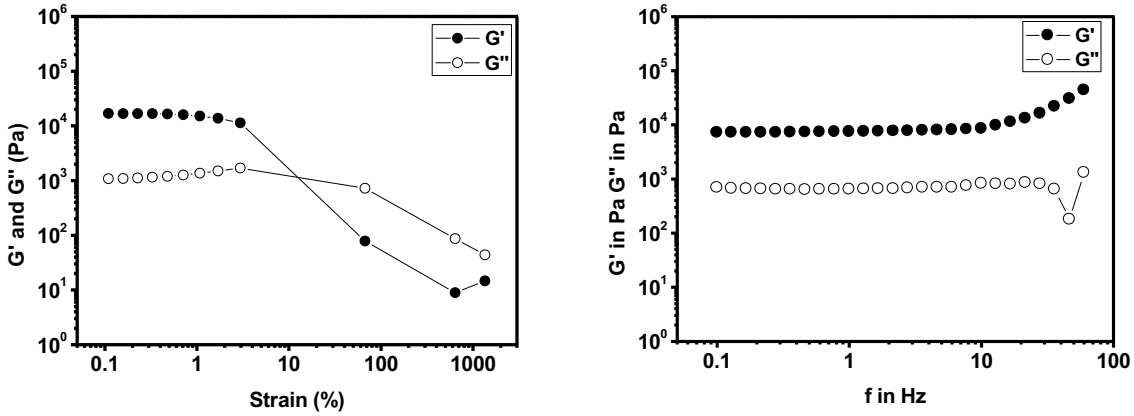

Figure S.I.29. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.2 M NaCl.

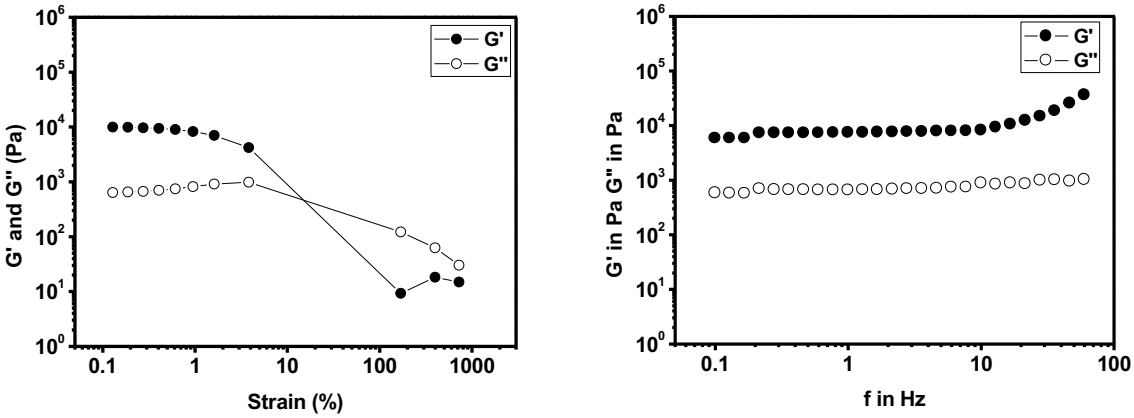

Figure S.I.30. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.3 M NaCl.

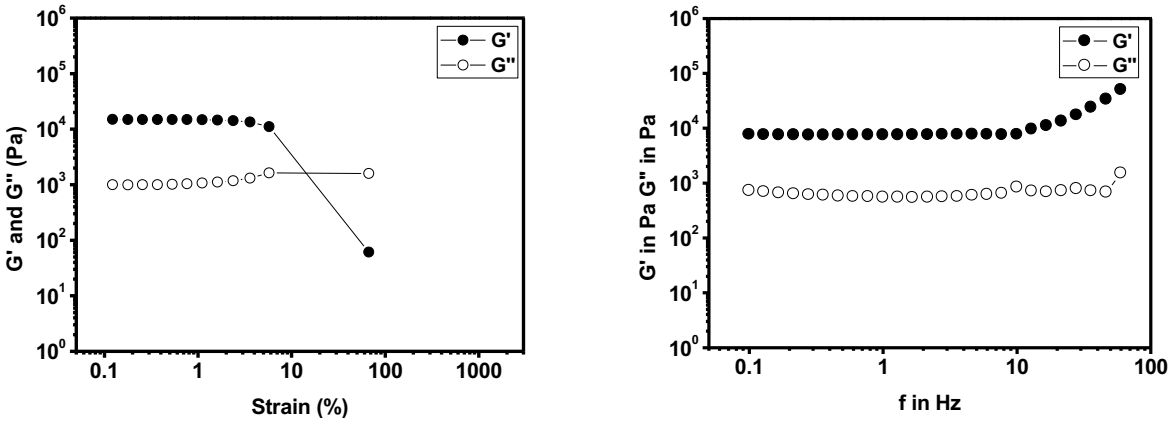

Figure S.I.31. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaCl**, using 0.4 M NaCl.

Variation of Na_2SO_4

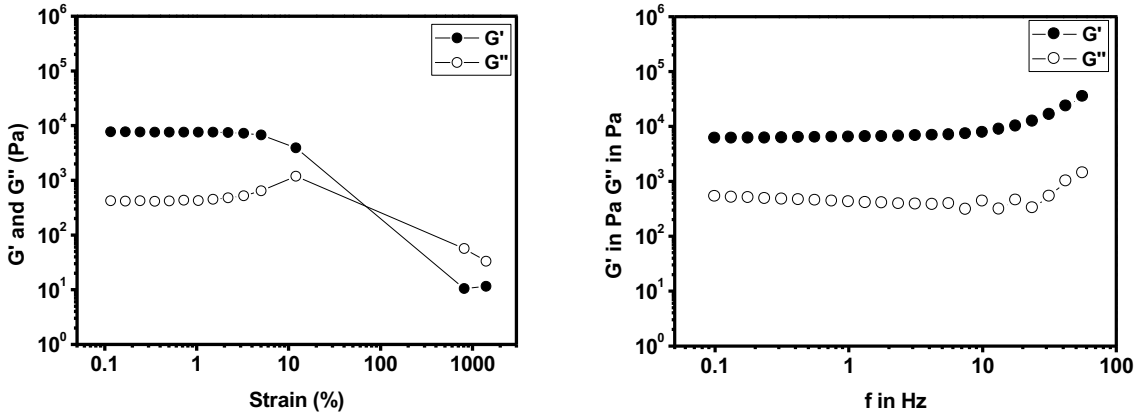

Figure S.I.32. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.01 M Na_2SO_4.

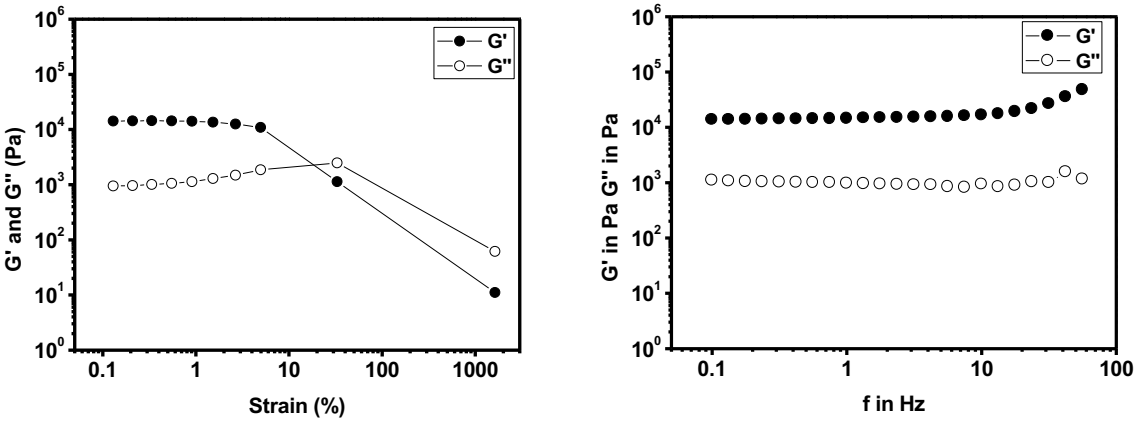

Figure S.I.33. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.03 M Na_2SO_4.

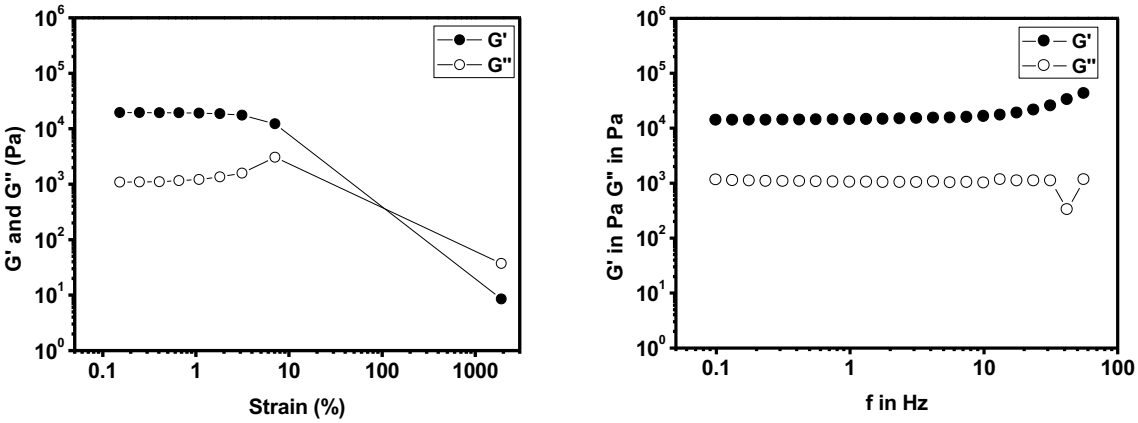

Figure S.I.34. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.04 M Na_2SO_4.

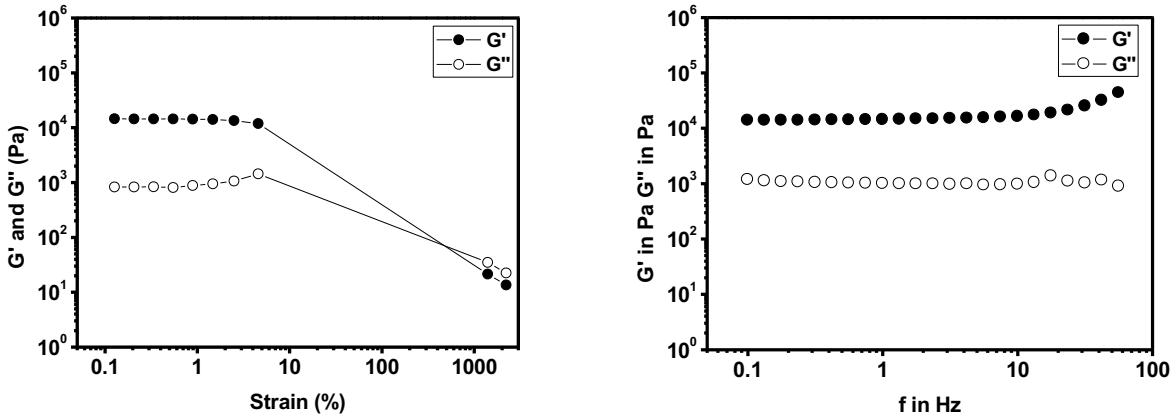

Figure S.I.35. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.05 M Na_2SO_4.

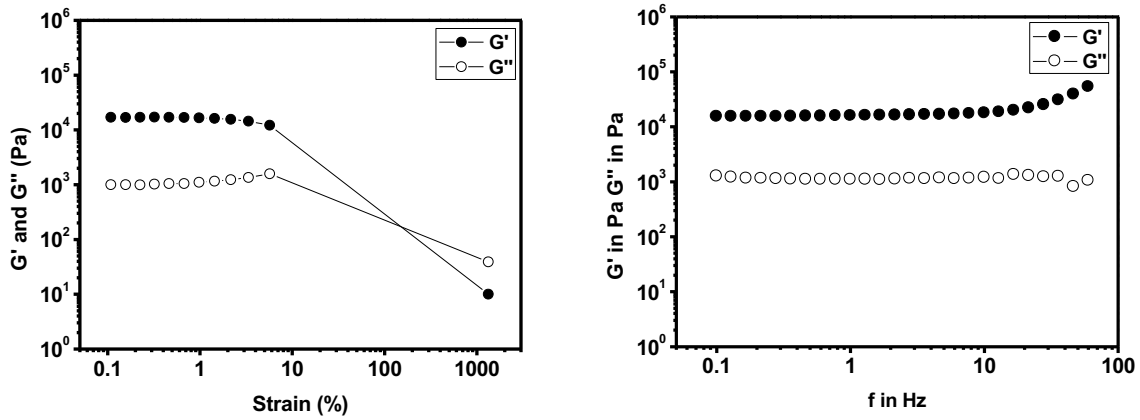

Figure S.I.36. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.1 M Na_2SO_4.

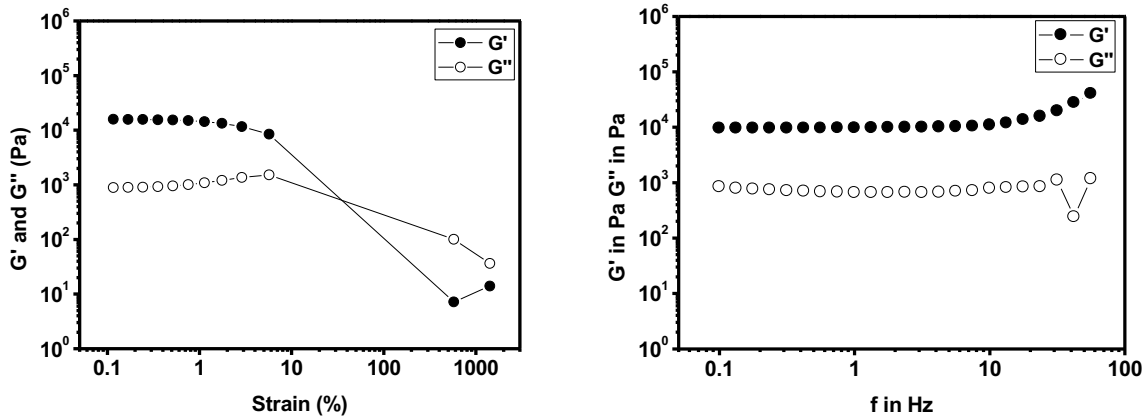

Figure S.I.37. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.2 M Na_2SO_4.

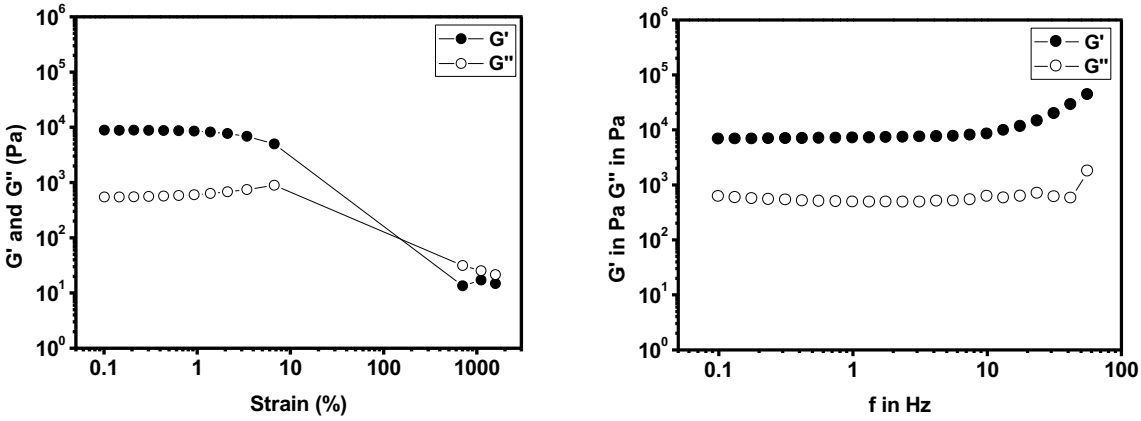

Figure S.I.38. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.3 M Na_2SO_4.

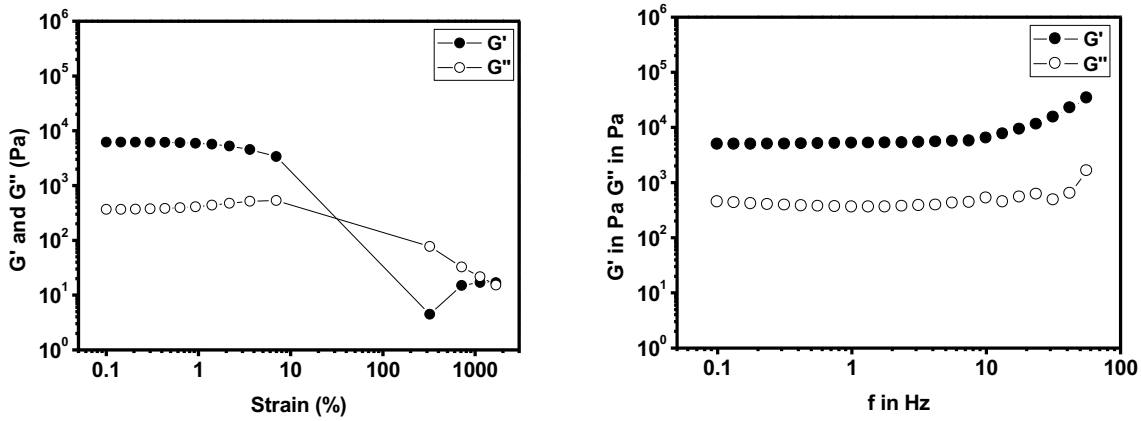

Figure S.I.39. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Na$_2$SO$_4$**, using 0.4 M Na_2SO_4.

Variation of NaI

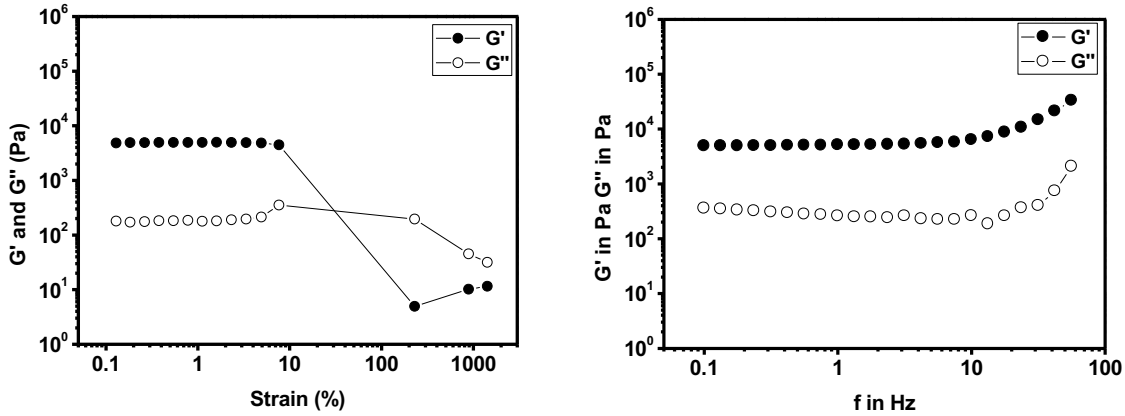

Figure S.I.40. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.01 M NaI.

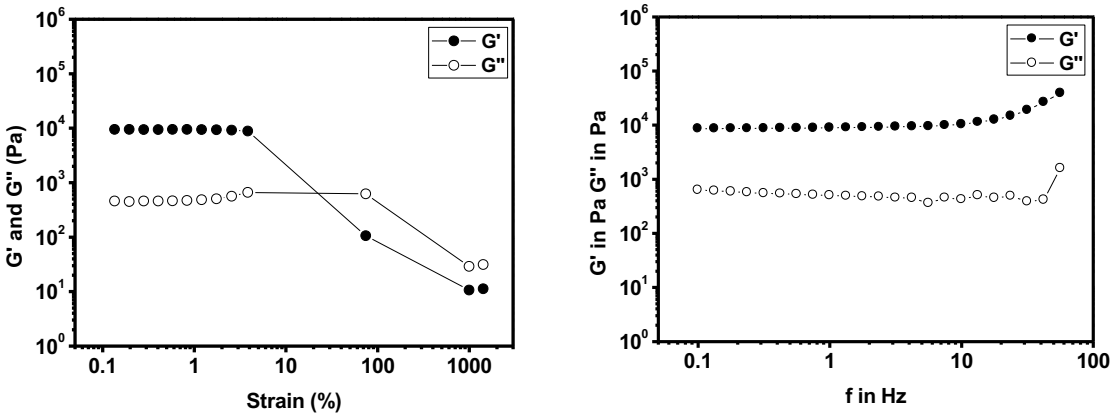

Figure S.I.41. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.03 M NaI.

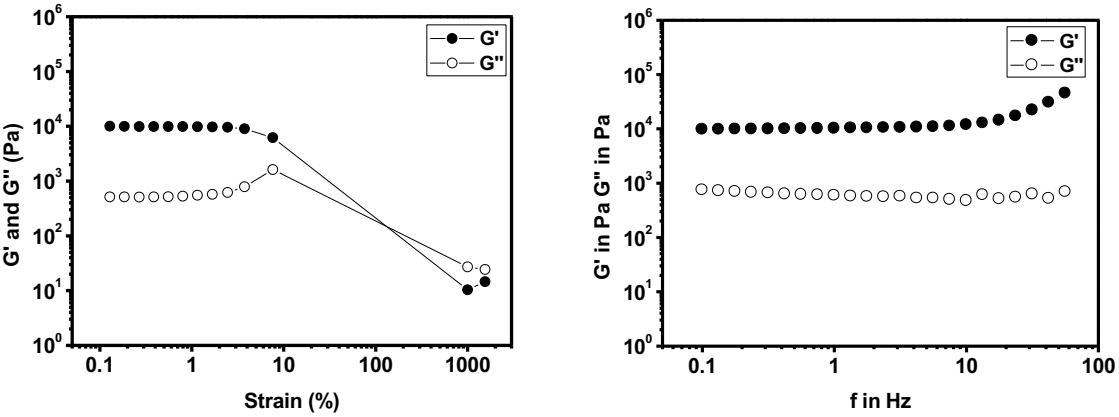

Figure S.I.42. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.04 M NaI.

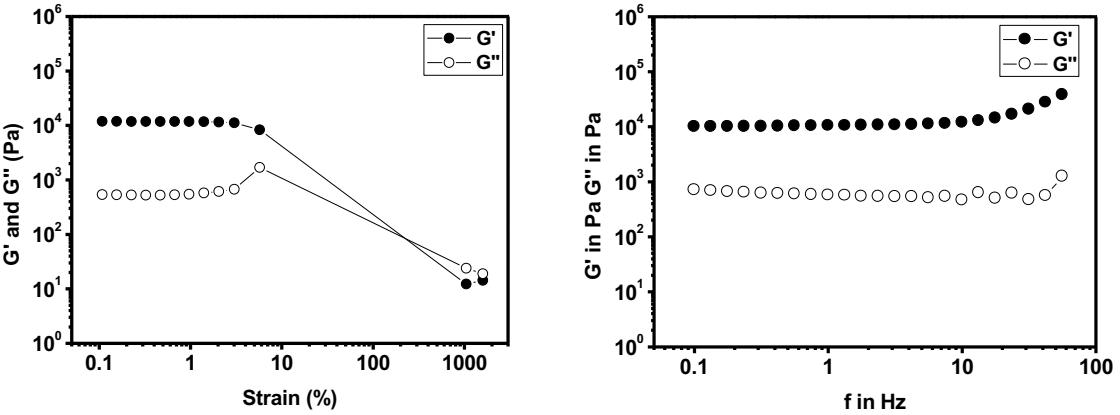

Figure S.I.43. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.05 M NaI.

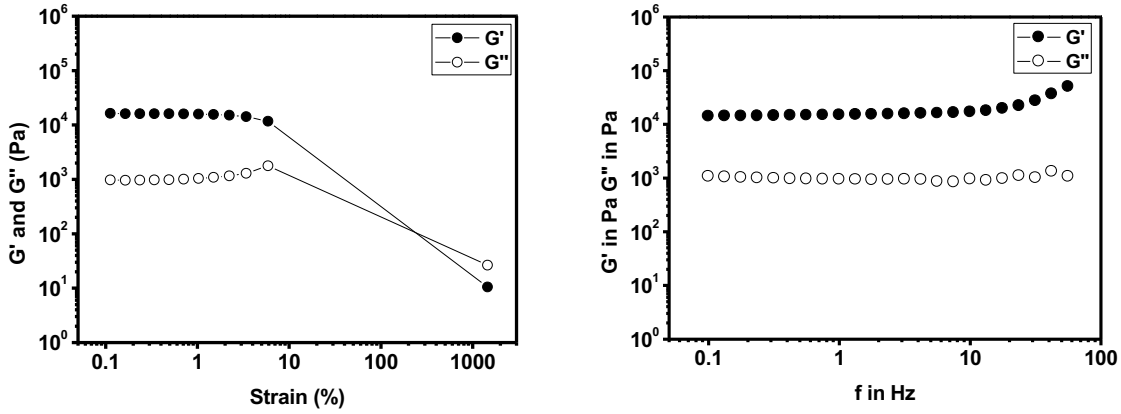

Figure S.I.44. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.1 M NaI.

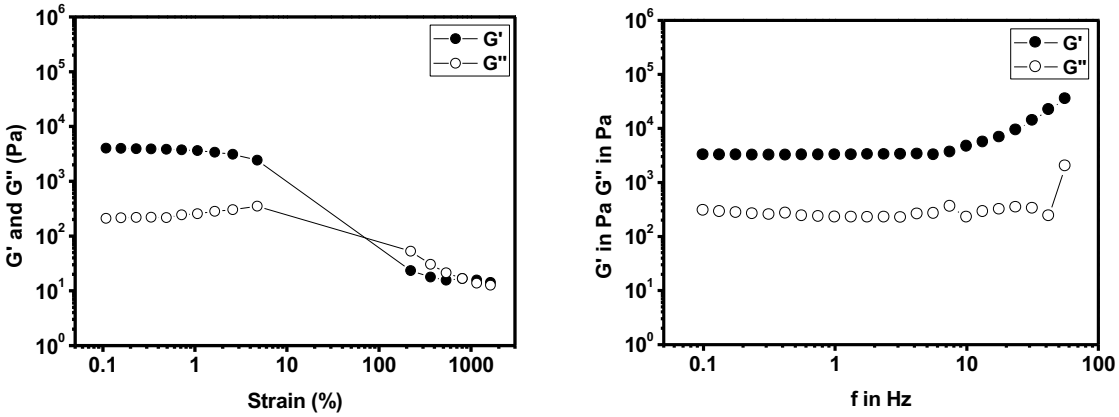

Figure S.I.45. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.2 M NaI.

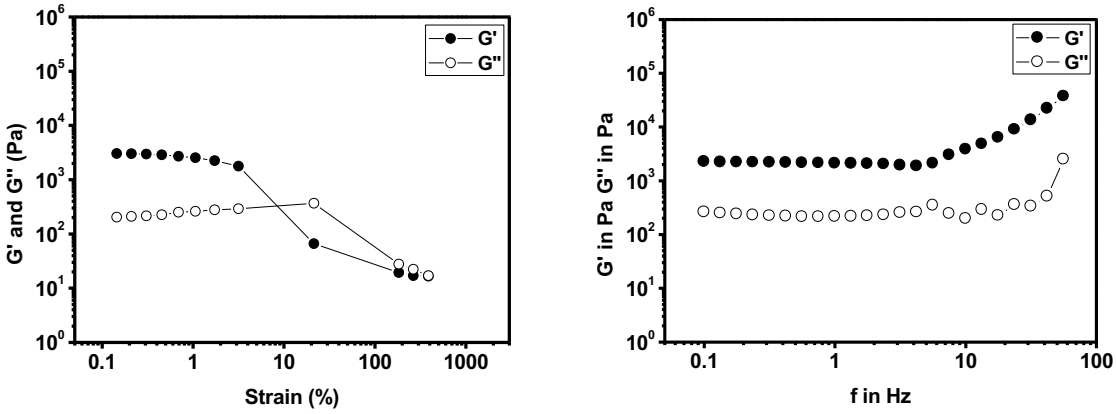

Figure S.I.46. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.3 M NaI.

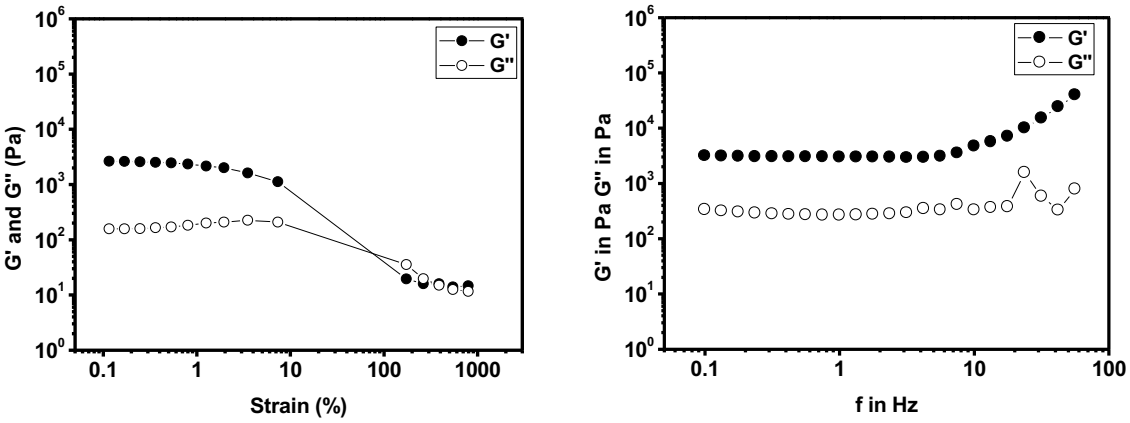

Figure S.I.47. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5NaI**, using 0.4 M NaI.

Variation of $MgSO_4$

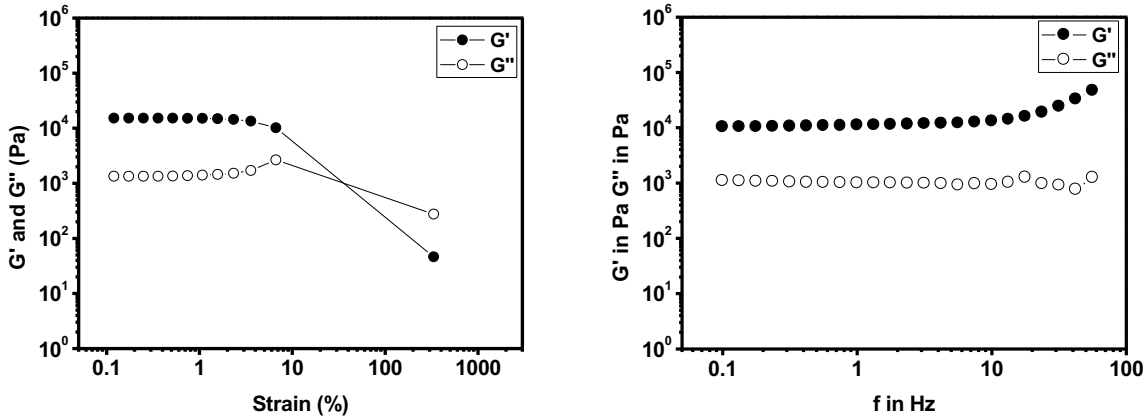

Figure S.I.48. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.01 M $MgSO_4$.

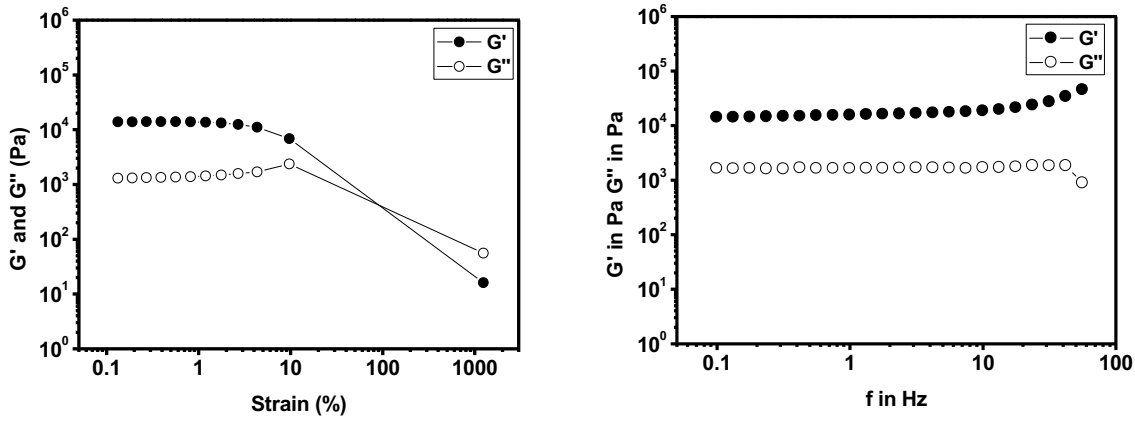

Figure S.I.49. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.03 M $MgSO_4$.

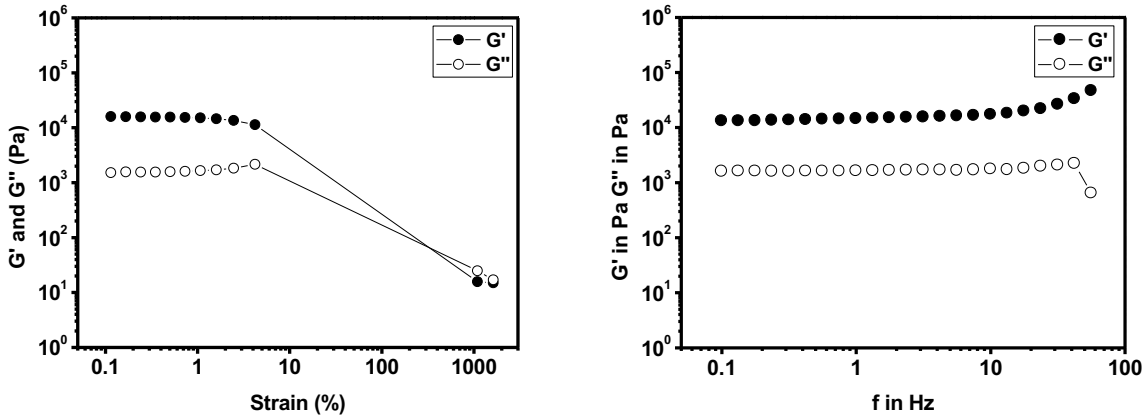

Figure S.I.50. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.04 M $MgSO_4$.

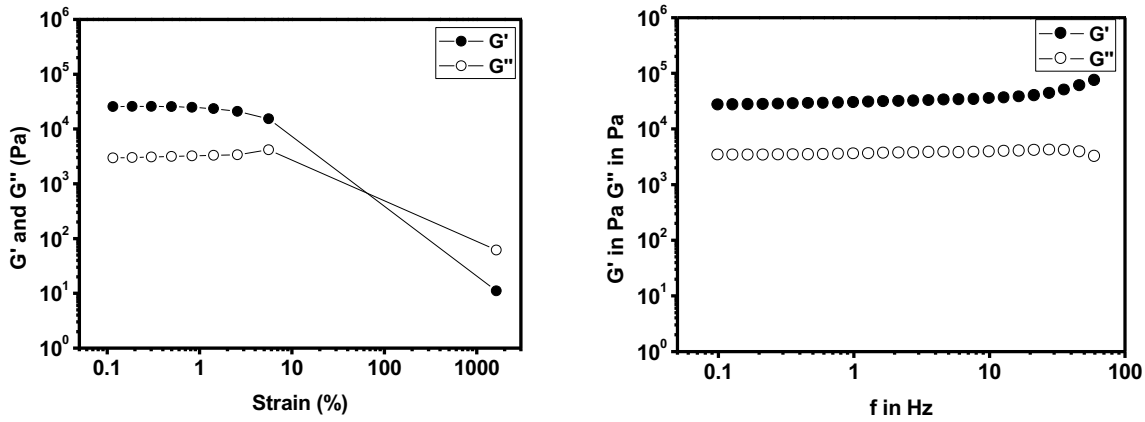

Figure S.I.51. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.05 M $MgSO_4$.

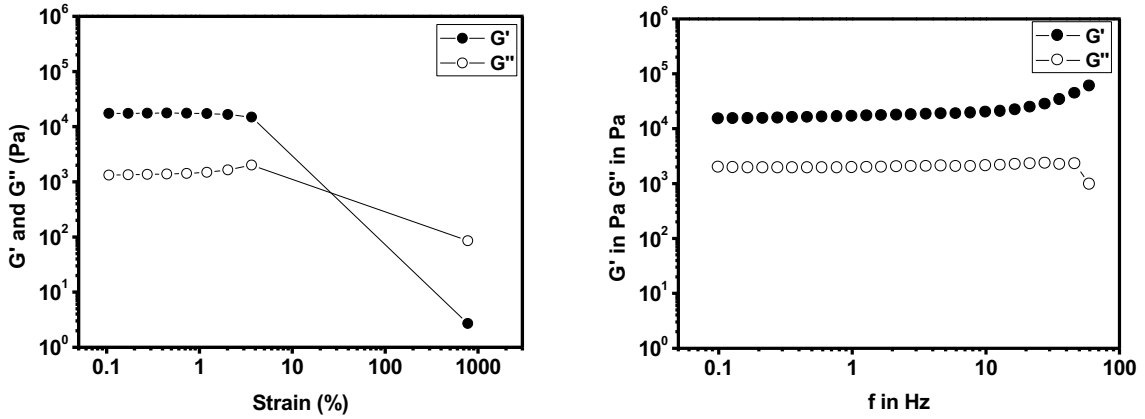

Figure S.I.52. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.1 M $MgSO_4$.

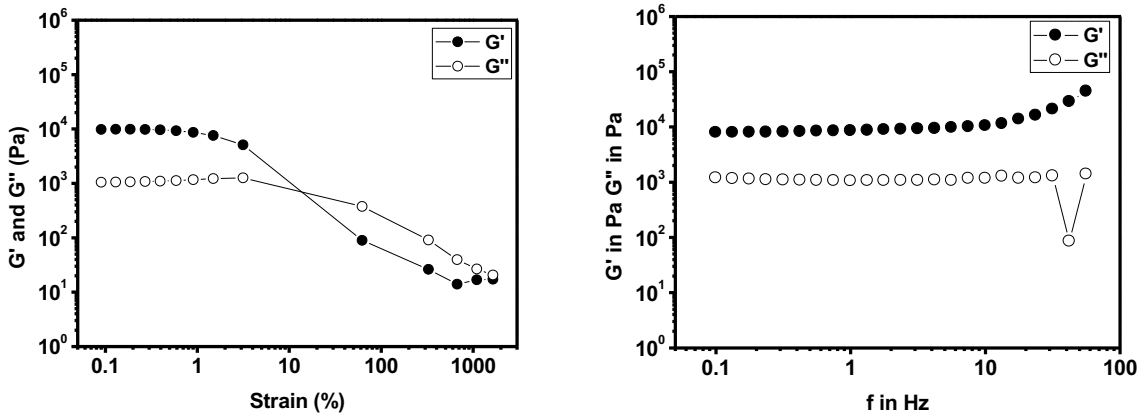

Figure S.I.53. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.2 M $MgSO_4$.

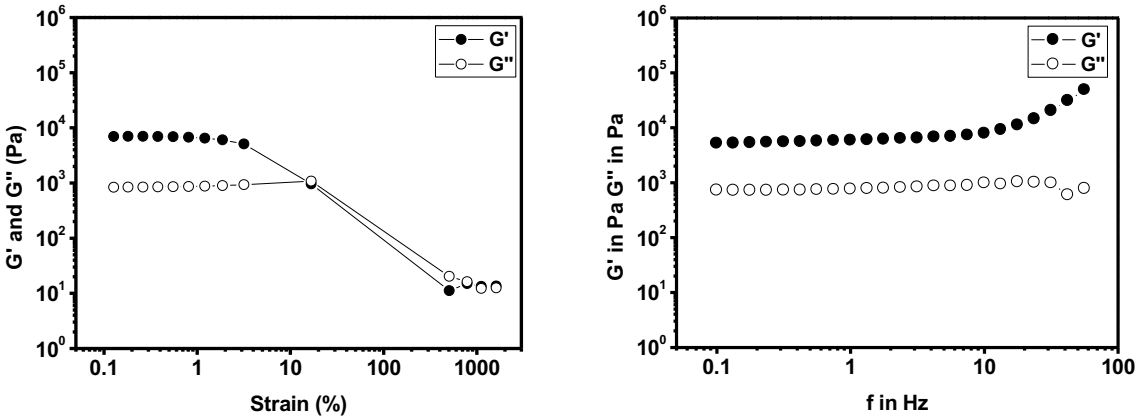

Figure S.I.54. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.3 M $MgSO_4$.

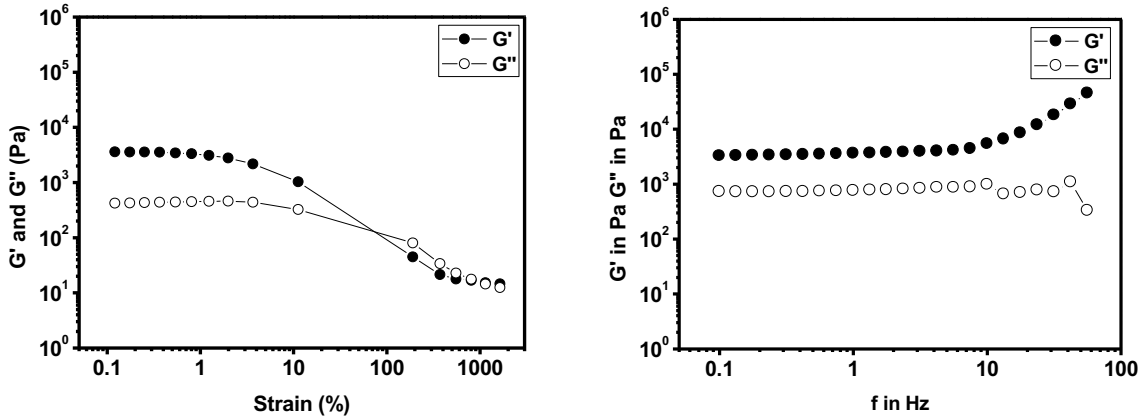

Figure S.I.55. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5MgSO$_4$**, using 0.4 M $MgSO_4$.

Variation of $CaCl_2$

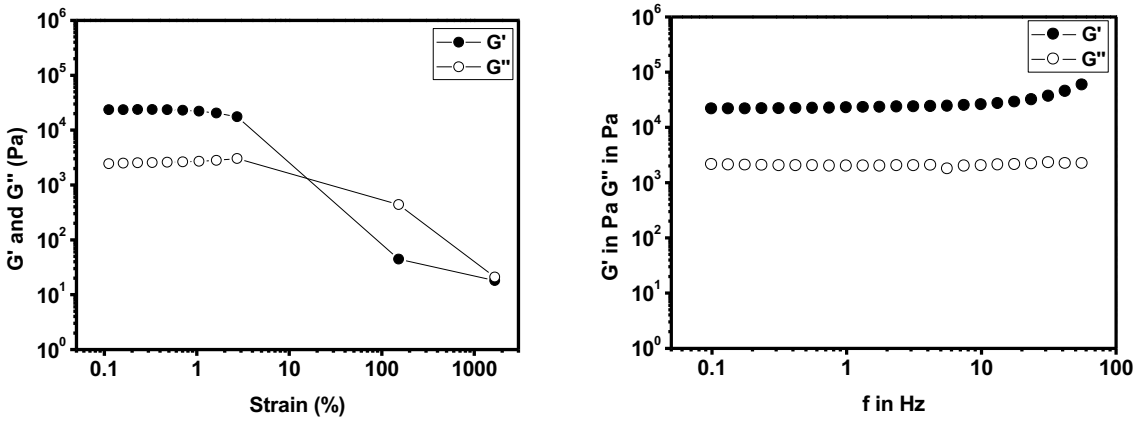

Figure S.I.56. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.01 M $CaCl_2$.

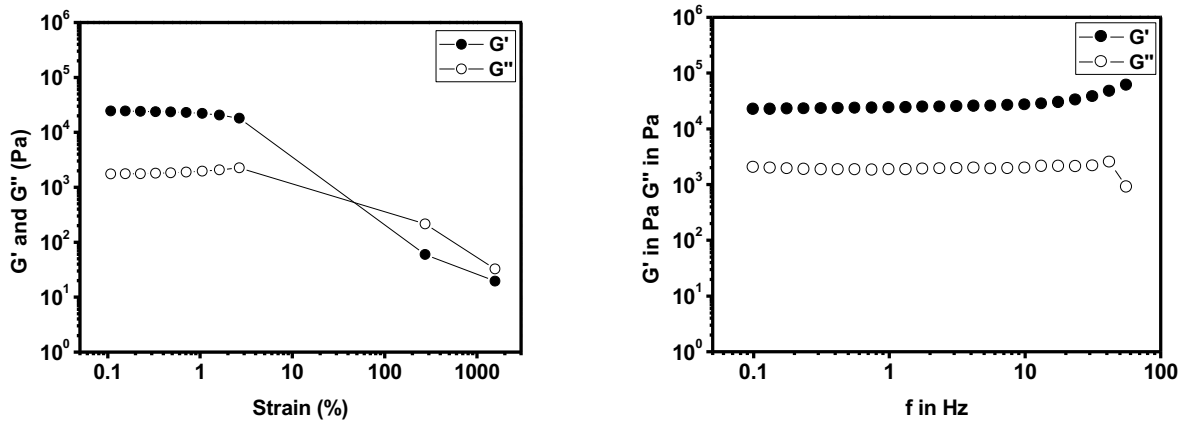

Figure S.I.57. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.03 M $CaCl_2$.

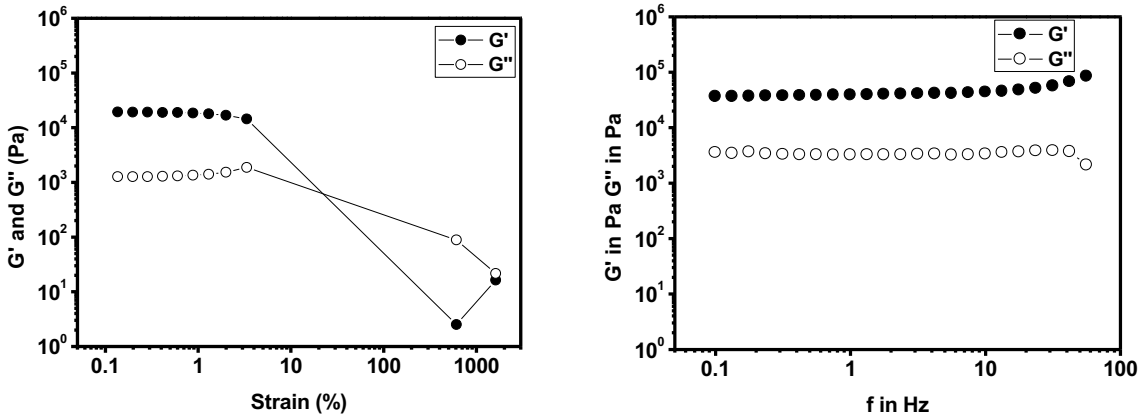

Figure S.I.58. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.04 M $CaCl_2$.

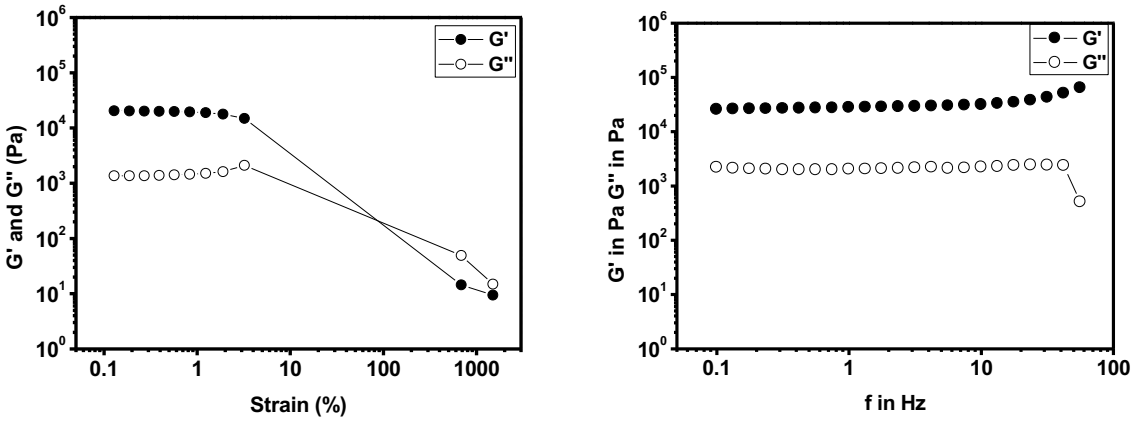

Figure S.I.59. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.05 M $CaCl_2$.

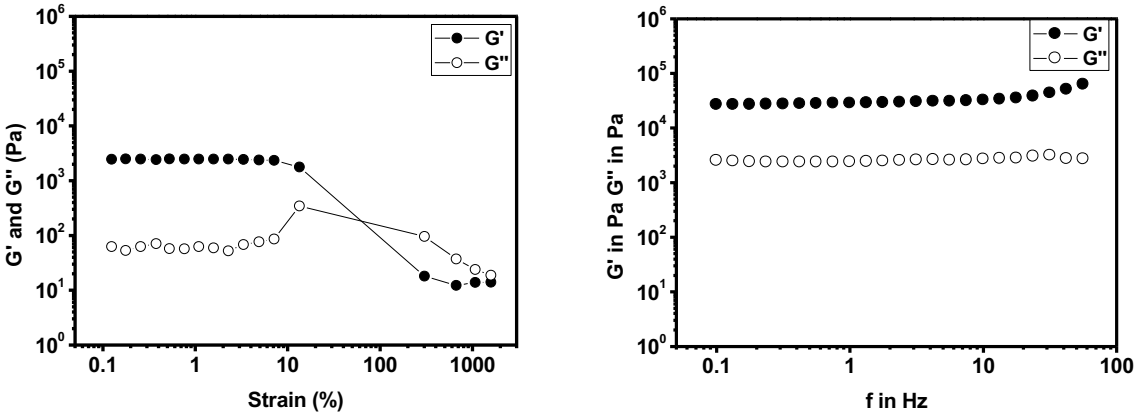

Figure S.I.60. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.1 M $CaCl_2$.

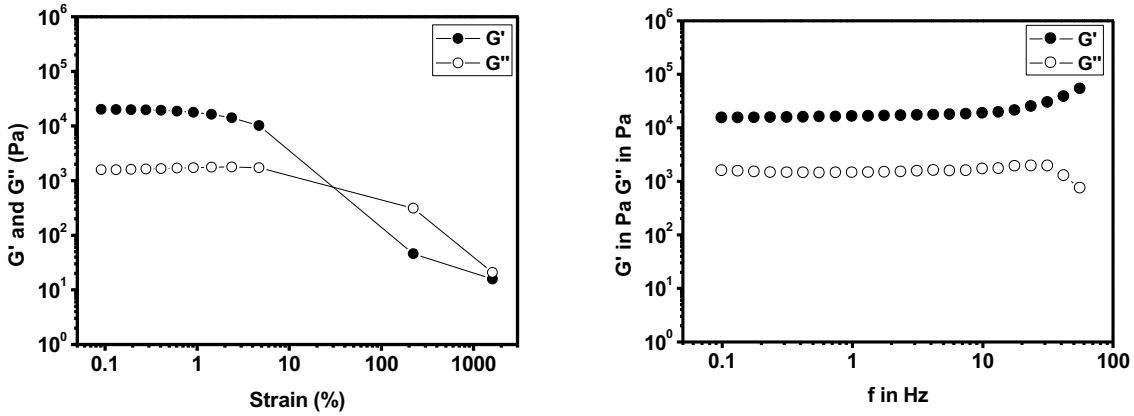

Figure S.I.61. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.2 M $CaCl_2$.

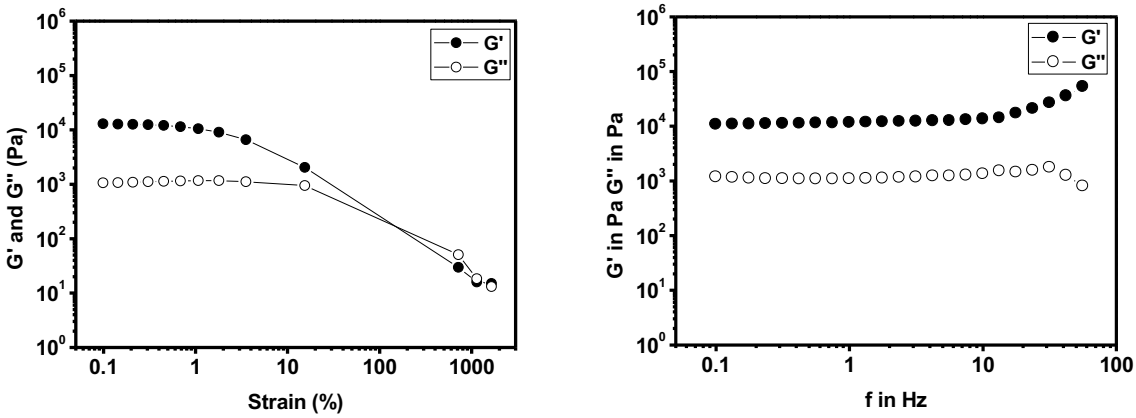

Figure S.I.62. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.3 M $CaCl_2$.

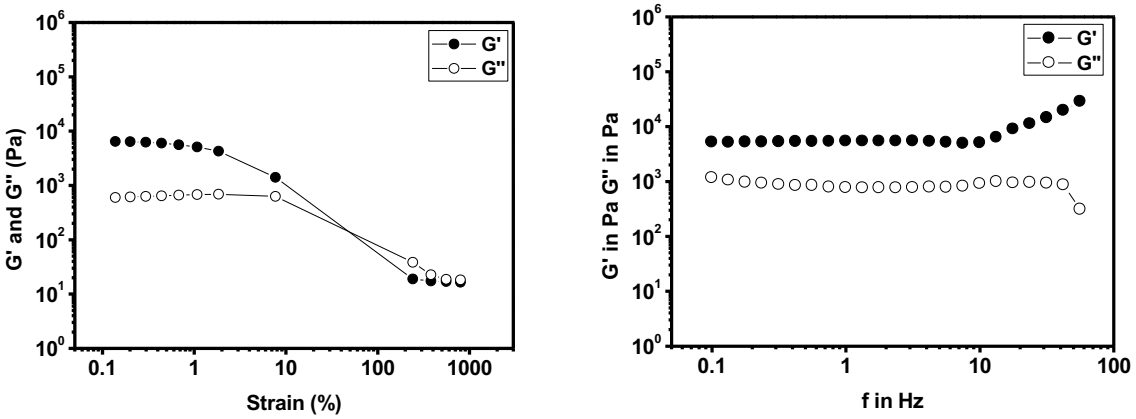

Figure S.I.63. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CaCl$_2$**, using 0.4 M $CaCl_2$.

Variation of $CuSO_4$

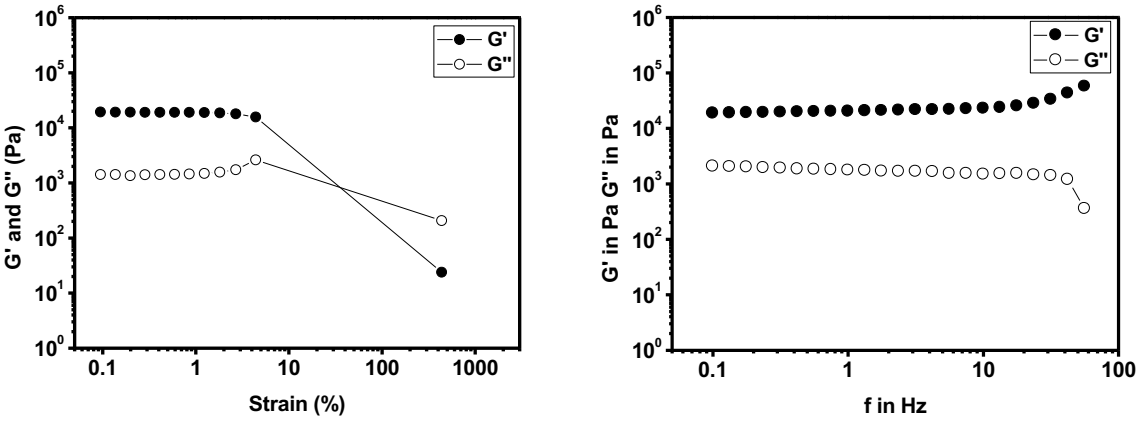

Figure S.I.64. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.01 M $CuSO_4$.

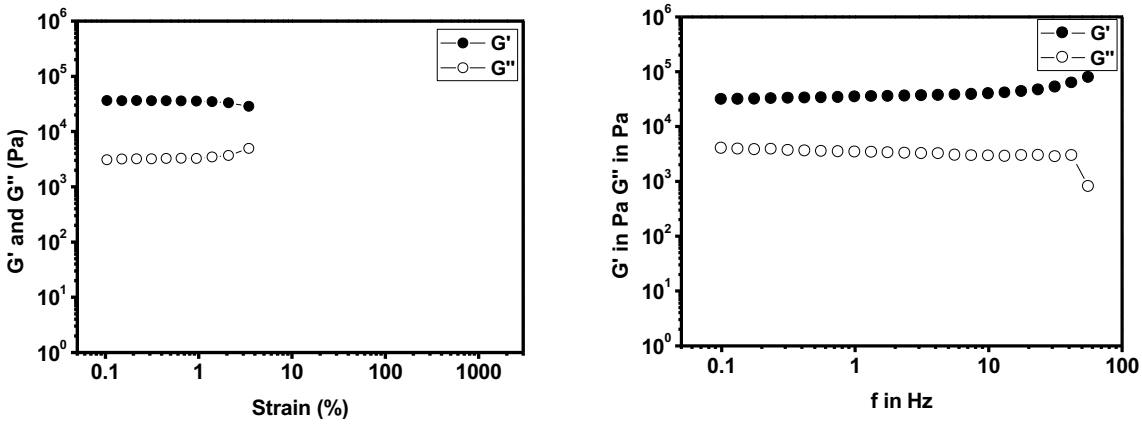

Figure S.I.65. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.03 M $CuSO_4$.

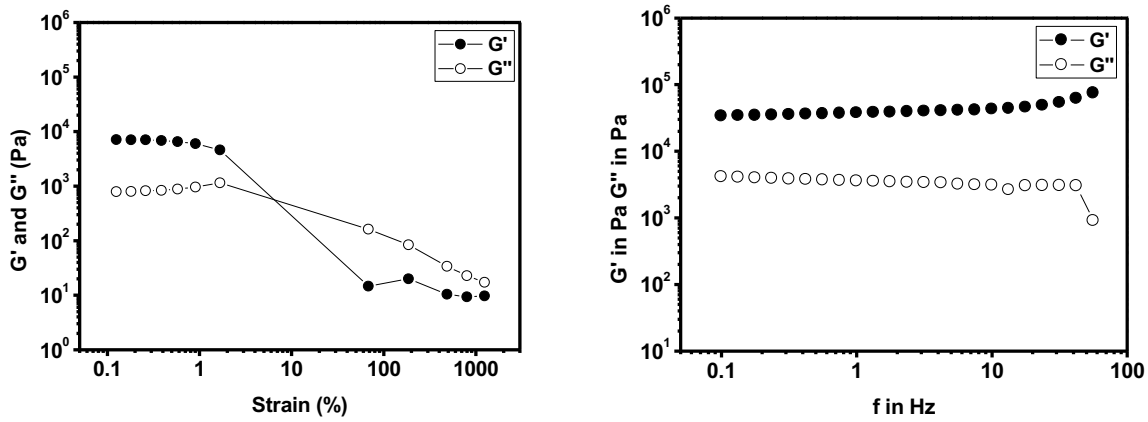

Figure S.I.66. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.04 M $CuSO_4$.

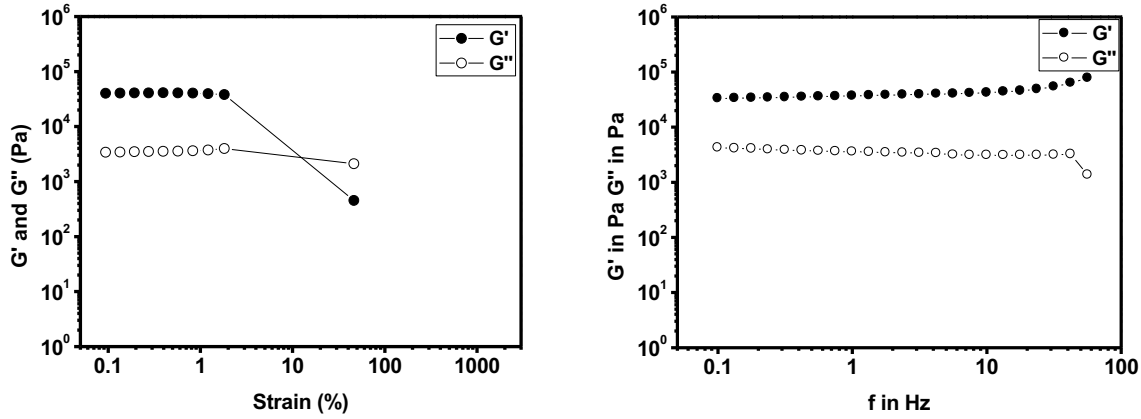

Figure S.I.67. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.05 M $CuSO_4$.

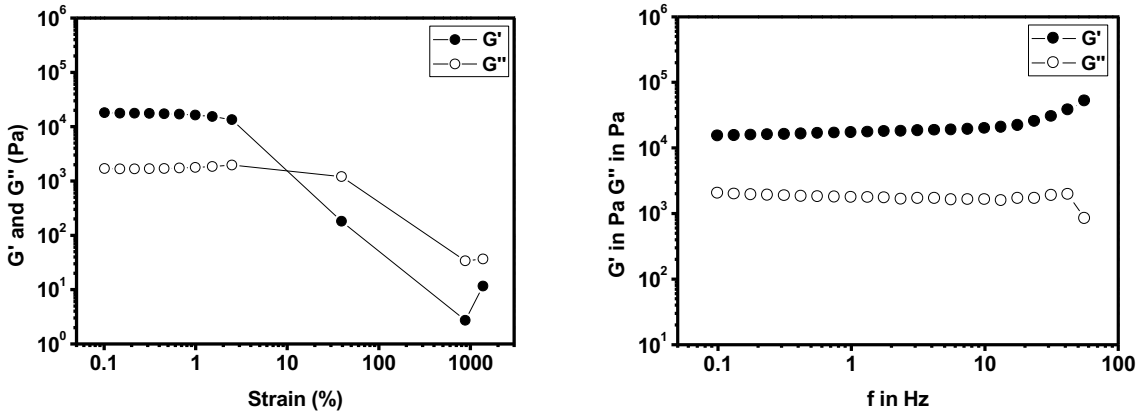

Figure S.I.68. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.1 M $CuSO_4$.

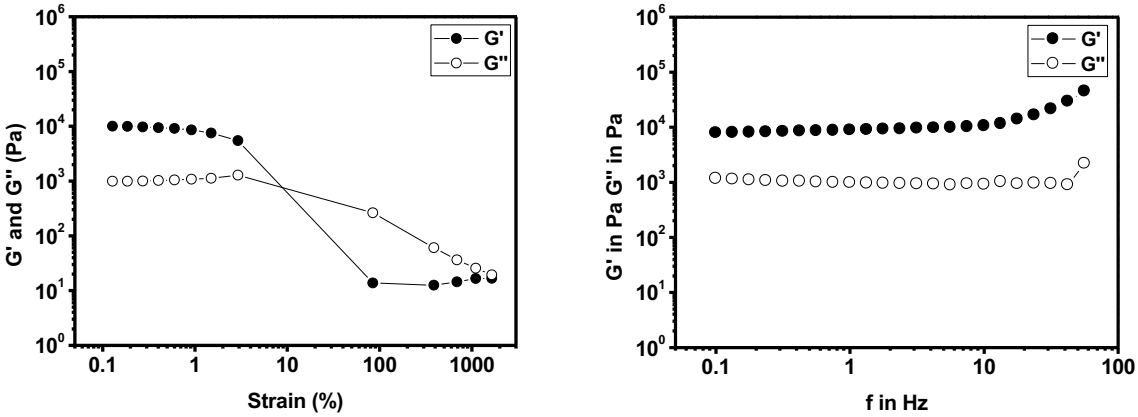

Figure S.I.69. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.2 M $CuSO_4$.

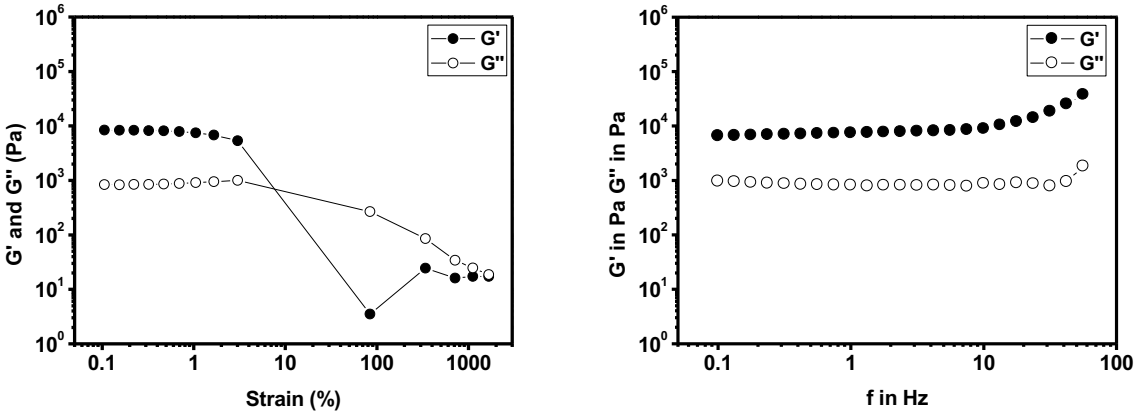

Figure S.I.70. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.3 M $CuSO_4$.

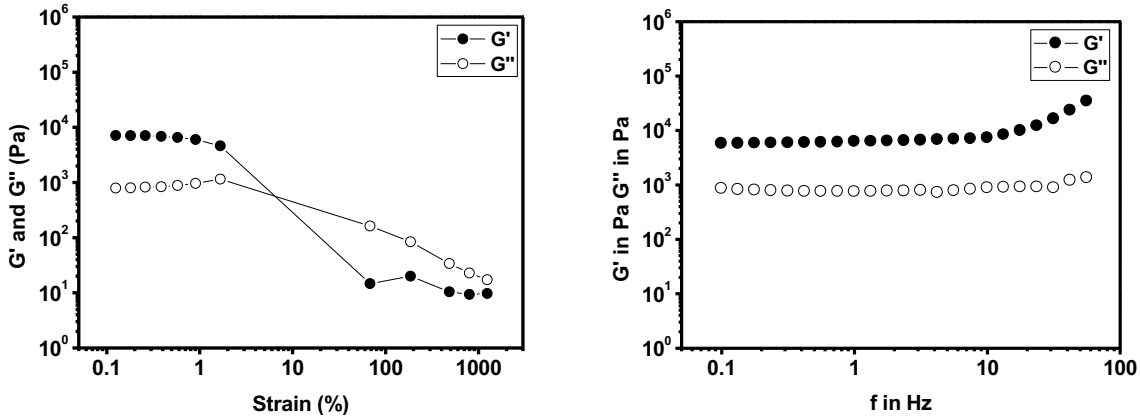

Figure S.I.71. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CuSO$_4$**, using 0.4 M $CuSO_4$.

Variation of $CeCl_3$

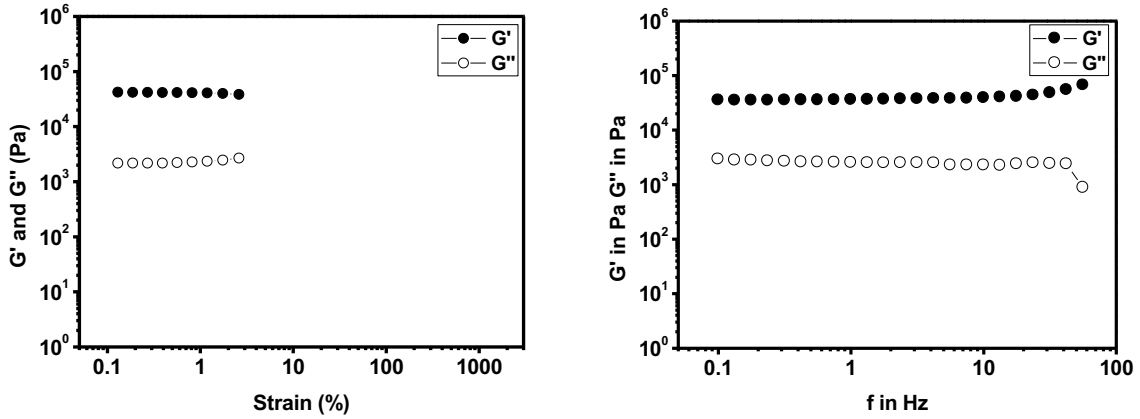

Figure S.I.72. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.01 M $CeCl_3$.

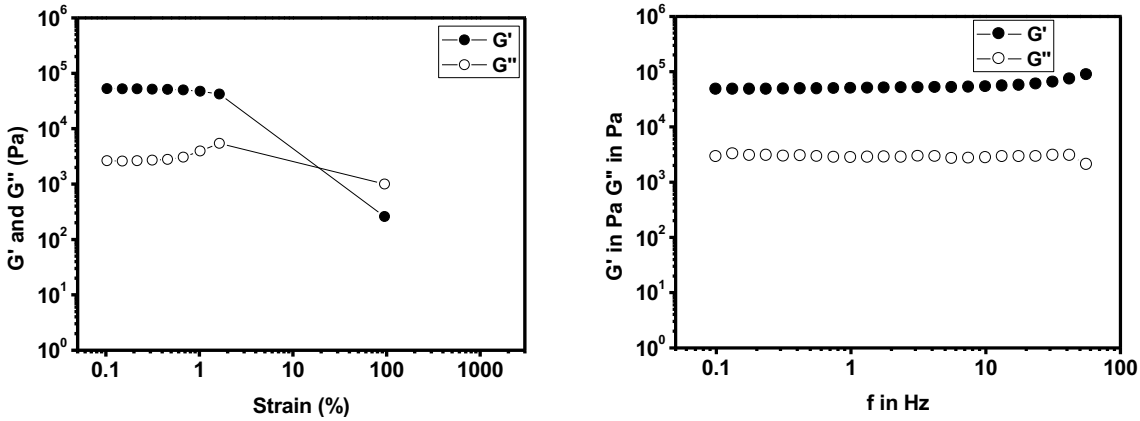

Figure S.I.73. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.03 M $CeCl_3$.

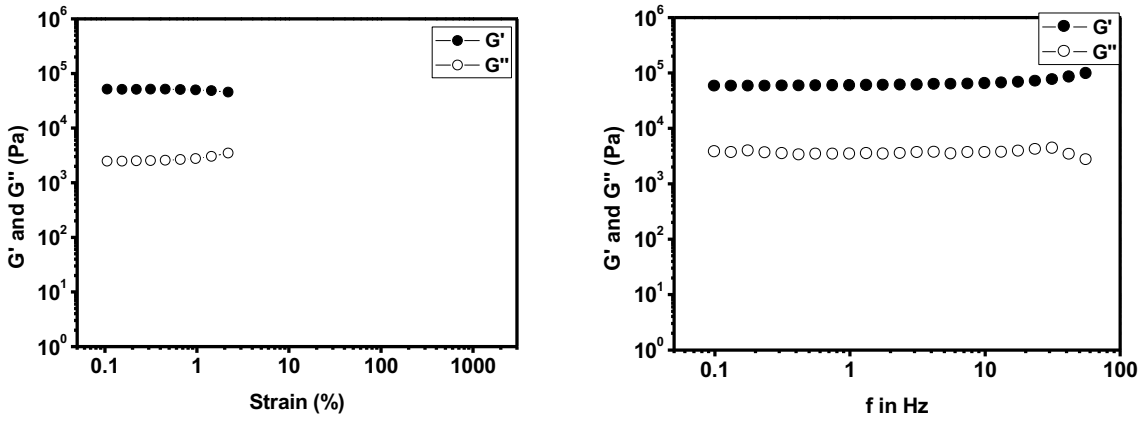

Figure S.I.74. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.04 M $CeCl_3$.

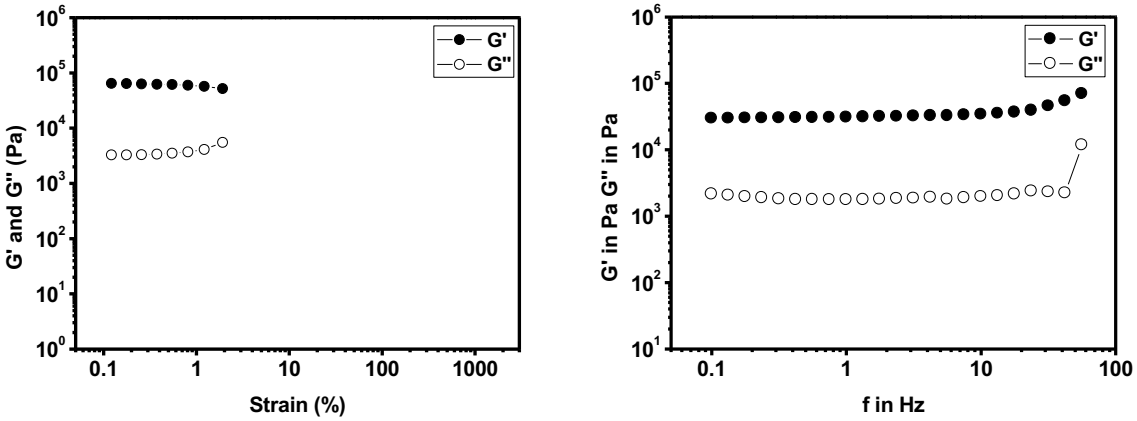

Figure S.I.75. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.05 M $CeCl_3$.

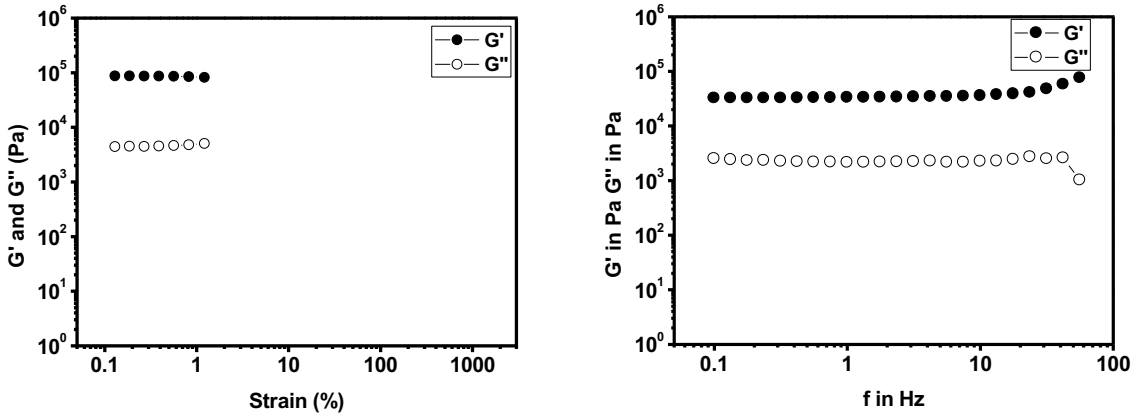

Figure S.I.76. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.1 M $CeCl_3$.

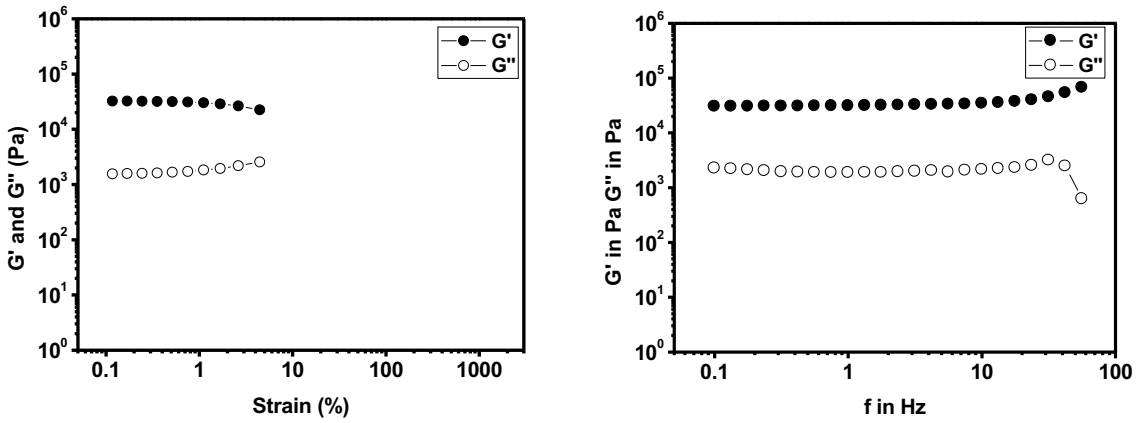

Figure S.I.77. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.2 M $CeCl_3$.

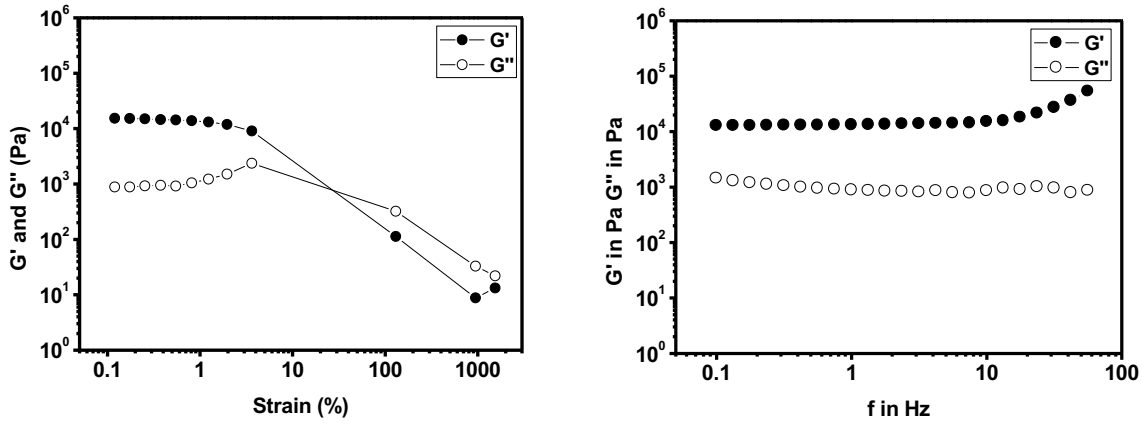

Figure S.I.78. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.3 M $CeCl_3$.

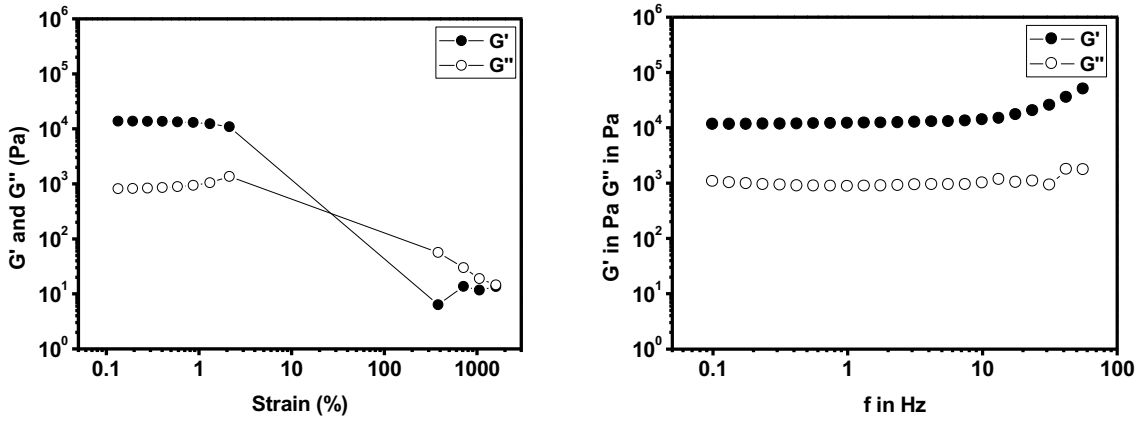

Figure S.I.79. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5CeCl$_3$**, using 0.4 M $CeCl_3$.

Variation of KCl

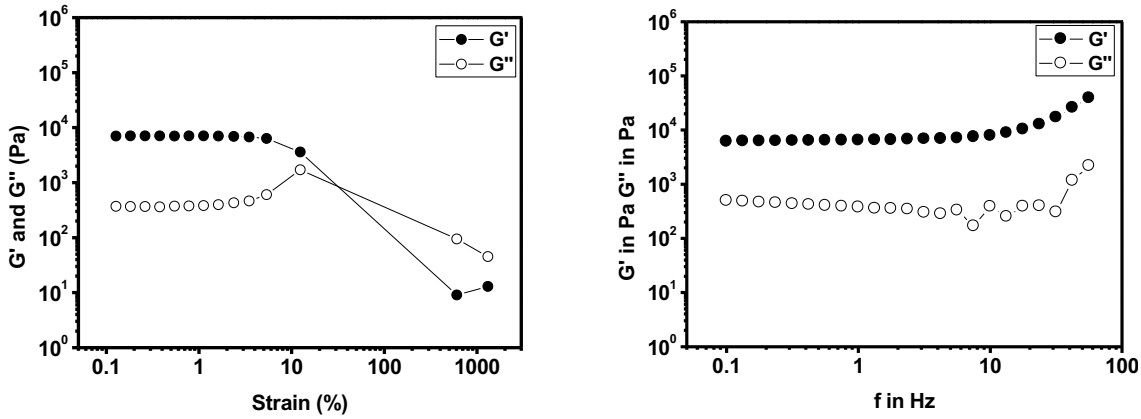

Figure S.I.80. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.01 M KCl.

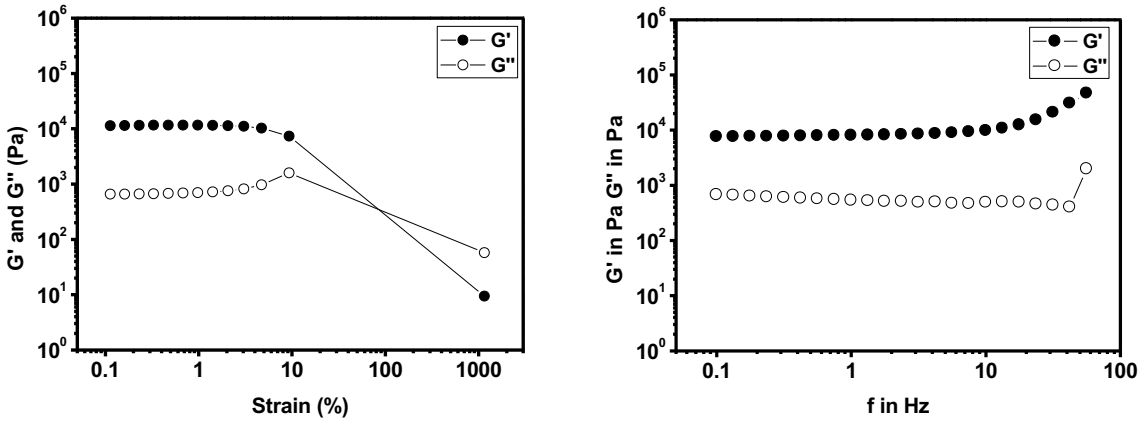

Figure S.I.81. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.03 M KCl.

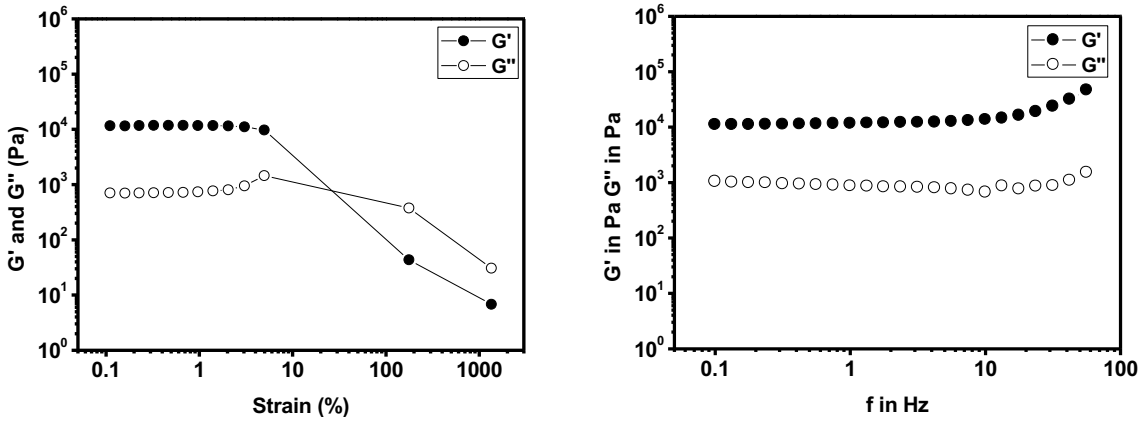

Figure S.I.82. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.04 M KCl.

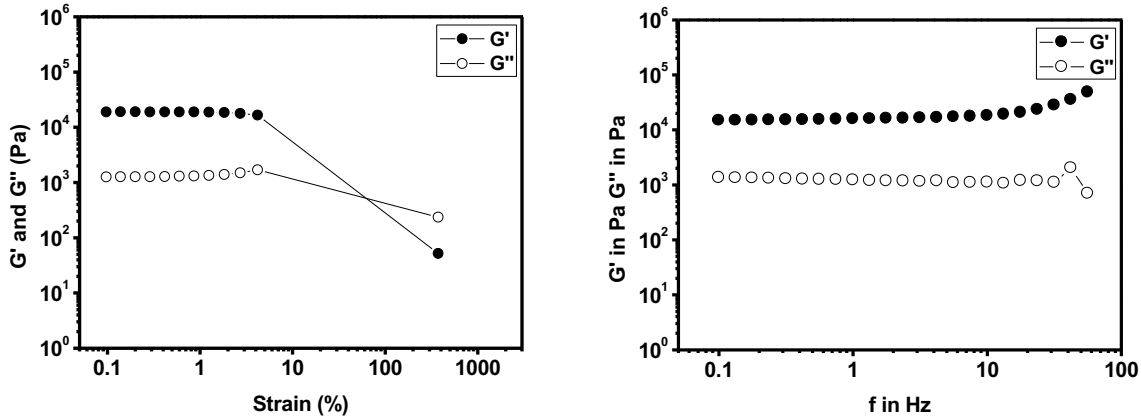

Figure S.I.83. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.05 M KCl.

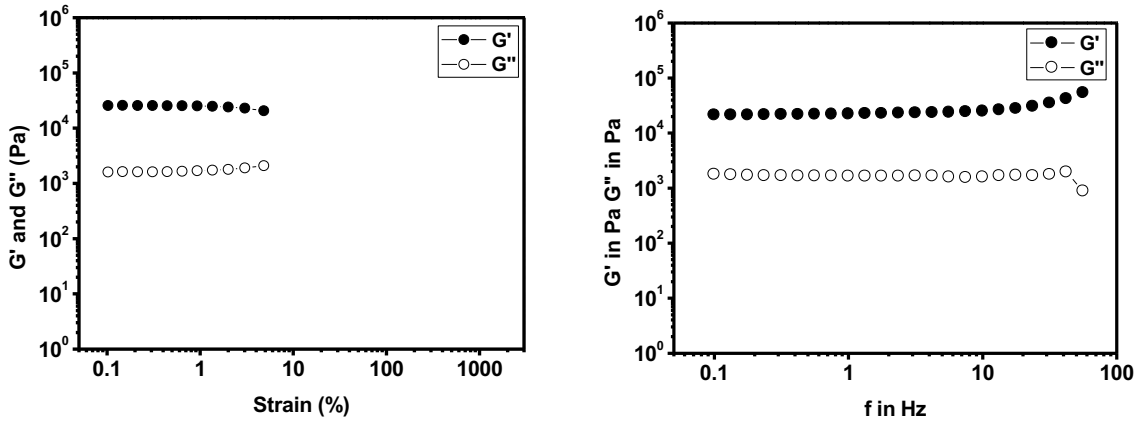

Figure S.I.84. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.1 M KCl.

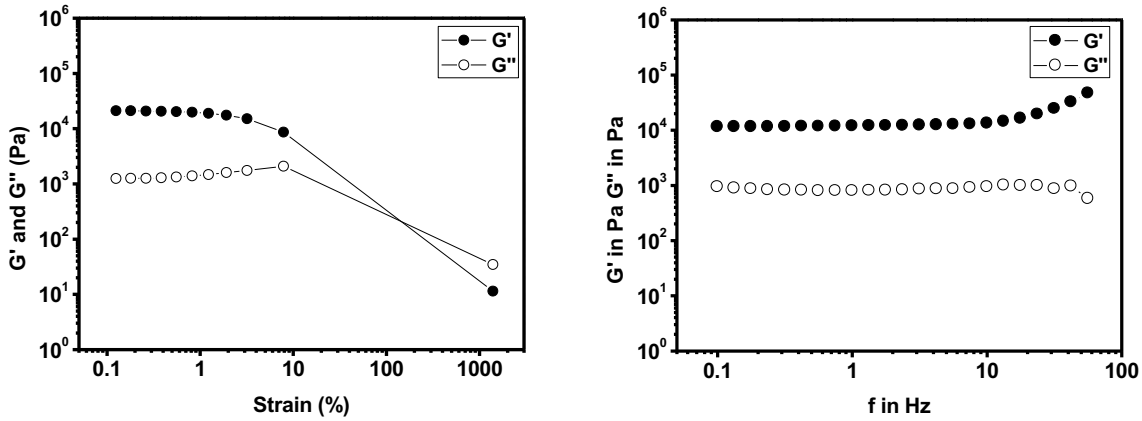

Figure S.I.85. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.2 M KCl.

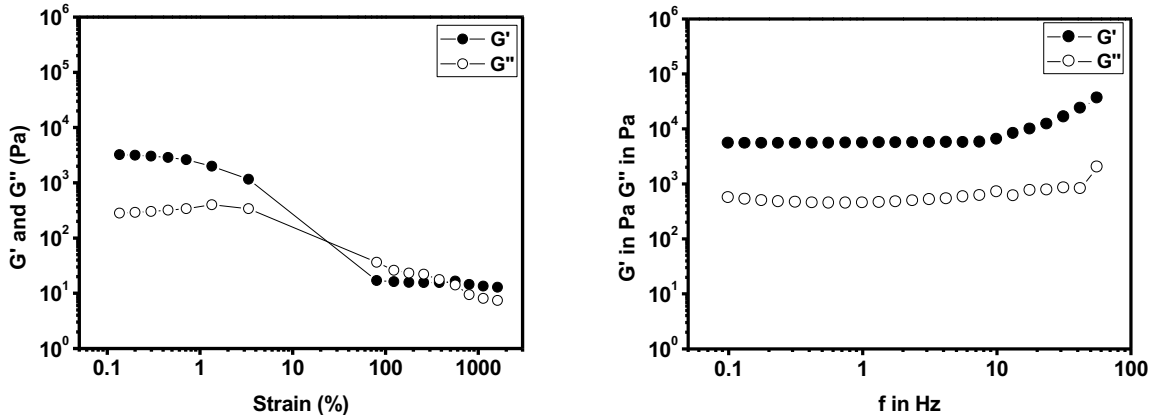

Figure S.I.86. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.3 M KCl.

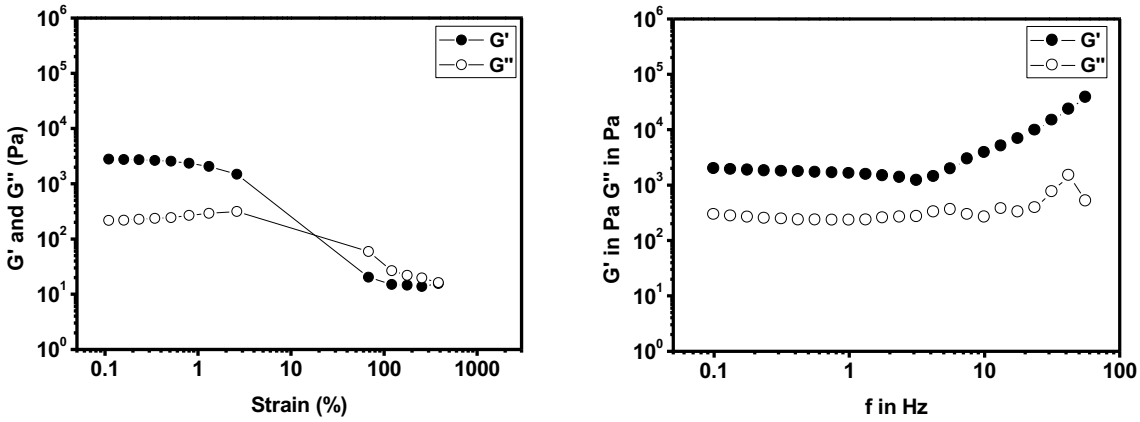

Figure S.I.87. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KCl**, using 0.4 M KCl.

Variation of KNO_3

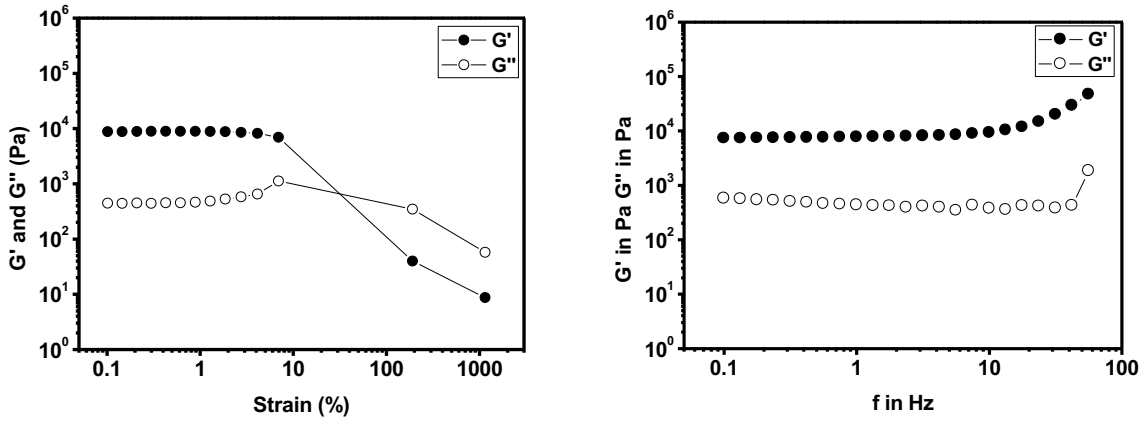

Figure S.I.88. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5KNO_3$**, using 0.01 M KNO_3.

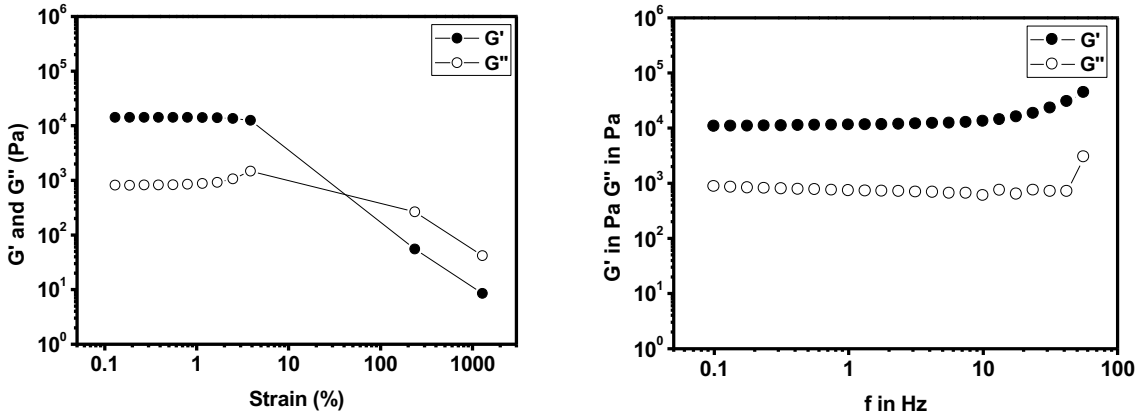

Figure S.I.89. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.03 M KNO_3.

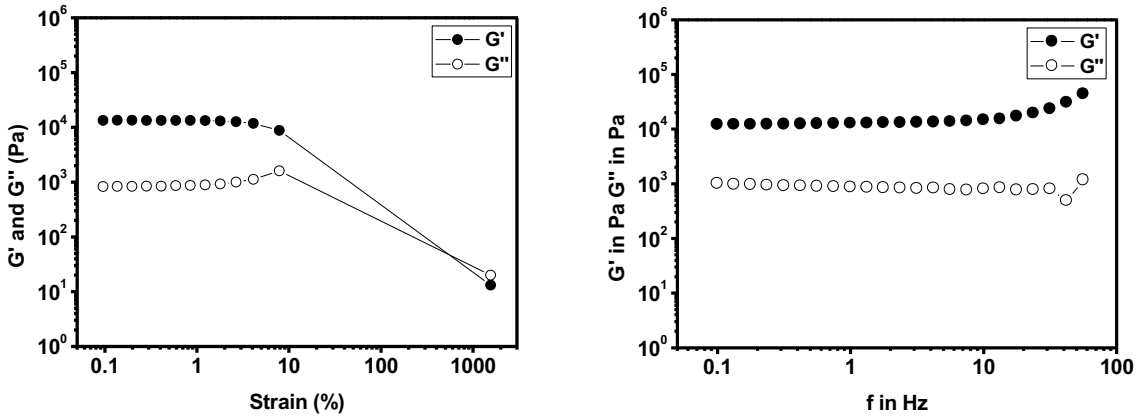

Figure S.I.90. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.04 M KNO_3.

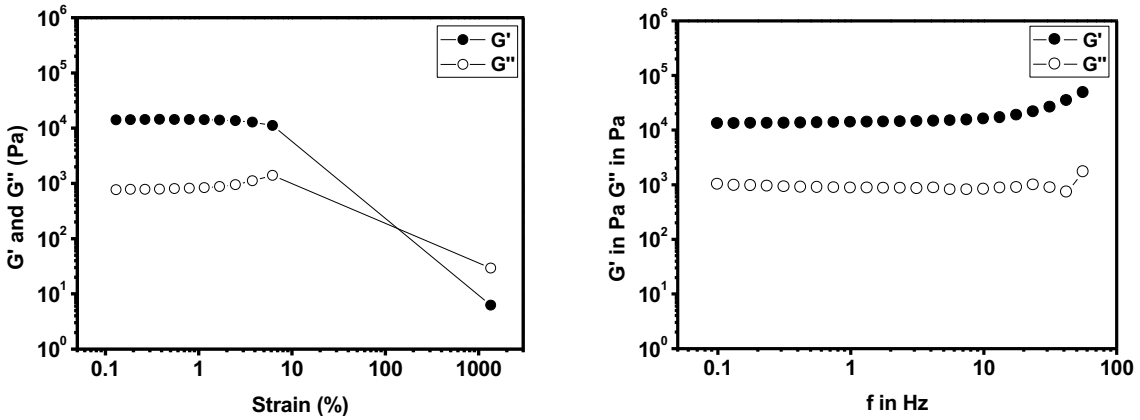

Figure S.I.91. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.05 M KNO_3.

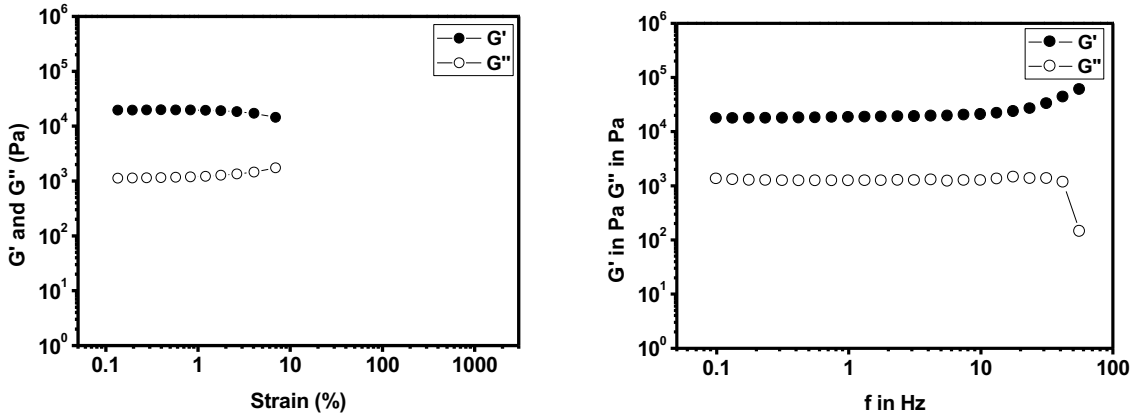

Figure S.I.92. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.1 M KNO_3.

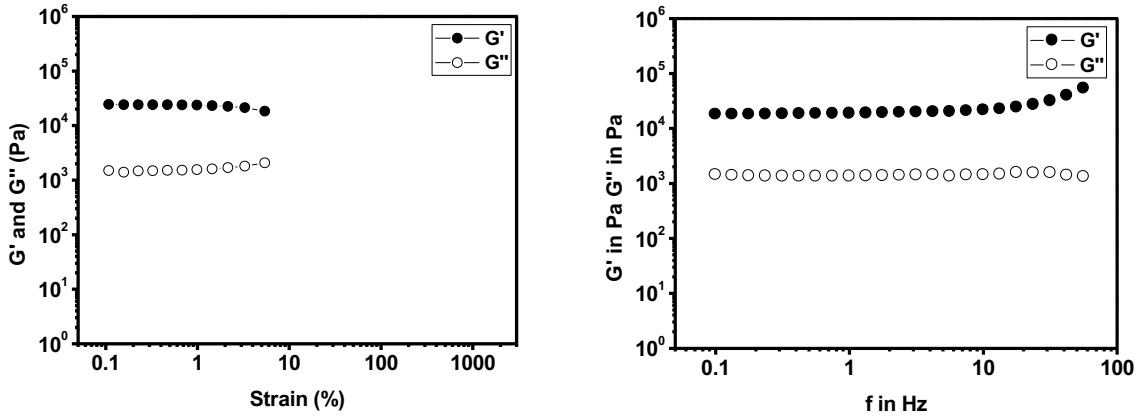

Figure S.I.93. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.2 M KNO_3.

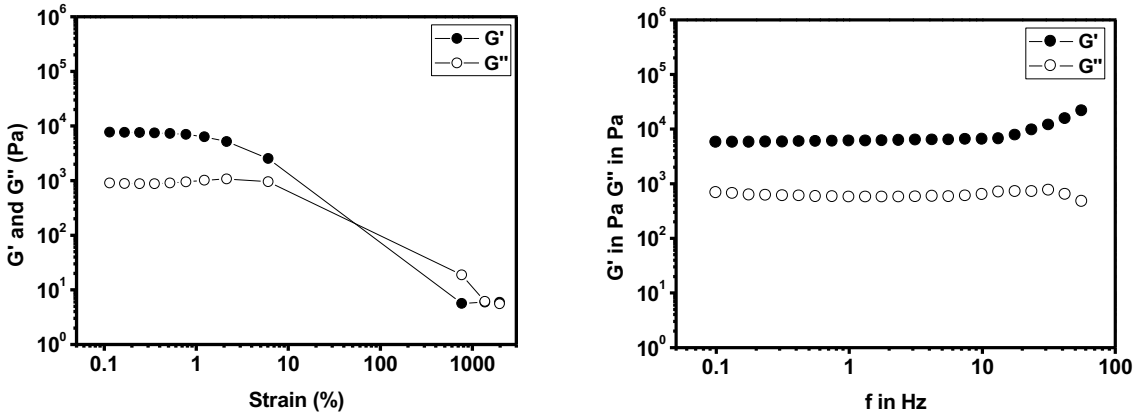

Figure S.I.94. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.3 M KNO_3.

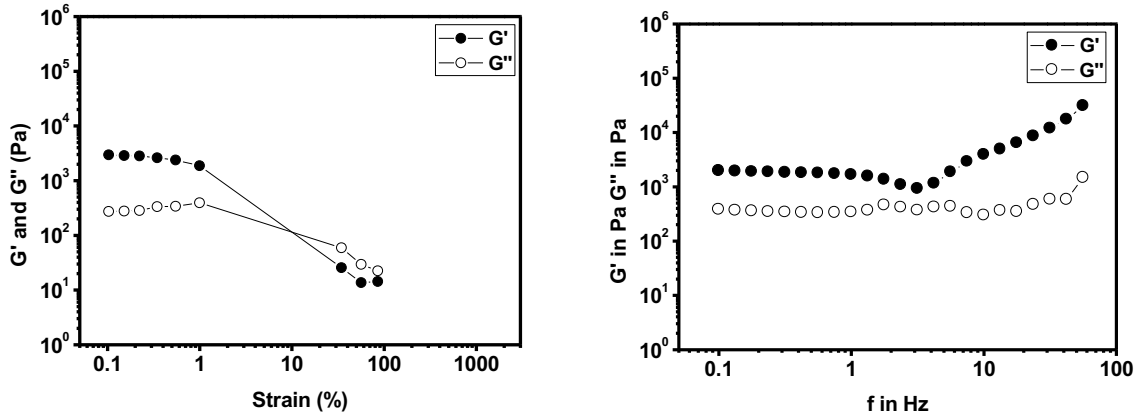

Figure S.I.95. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5KNO$_3$**, using 0.4 M KNO_3.

Variation of $ZnSO_4$

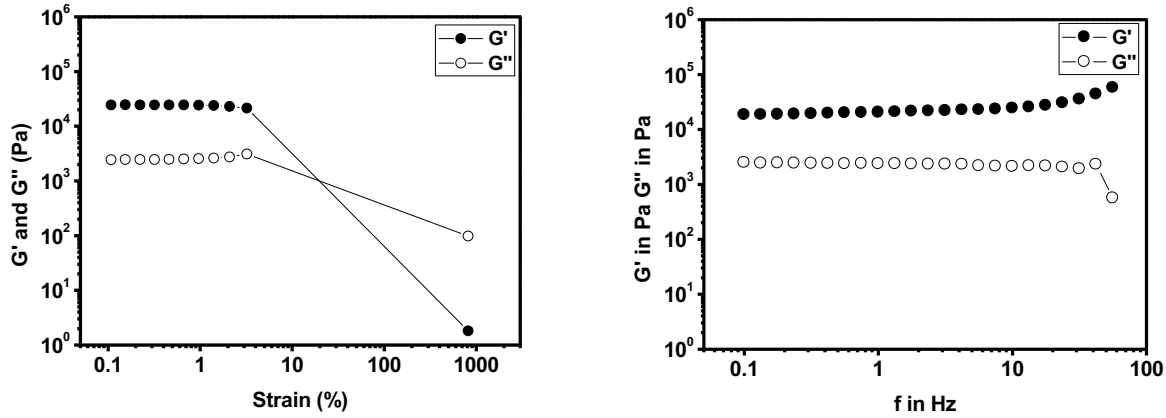

Figure S.I.96. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.01 M $ZnSO_4$.

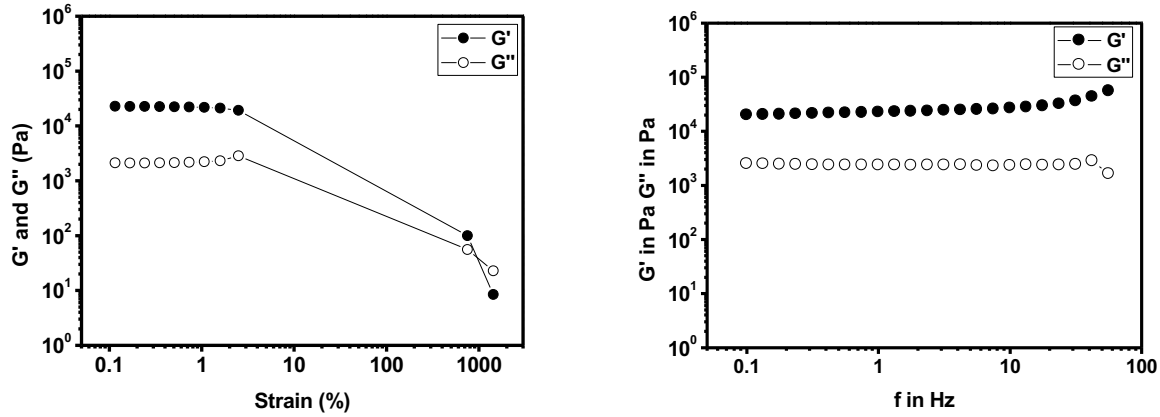

Figure S.I.97. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.03 M $ZnSO_4$.

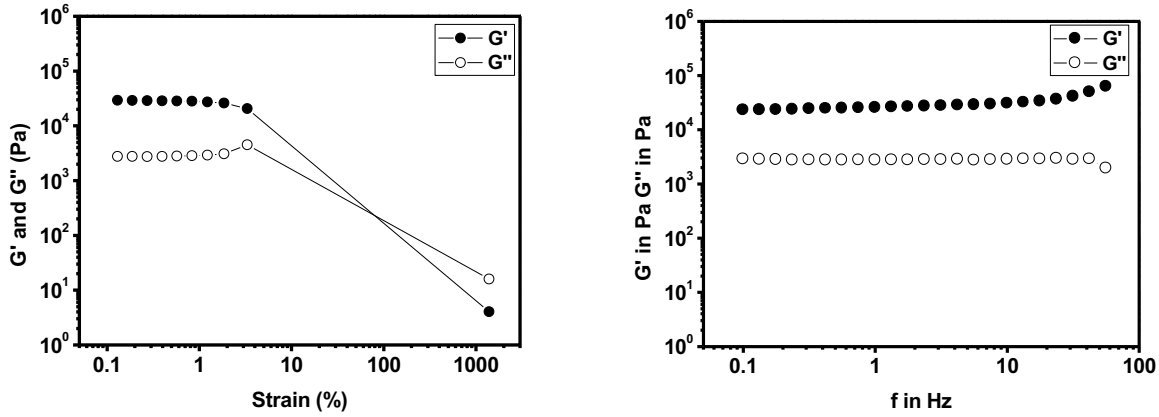

Figure S.I.98. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.04 M $ZnSO_4$.

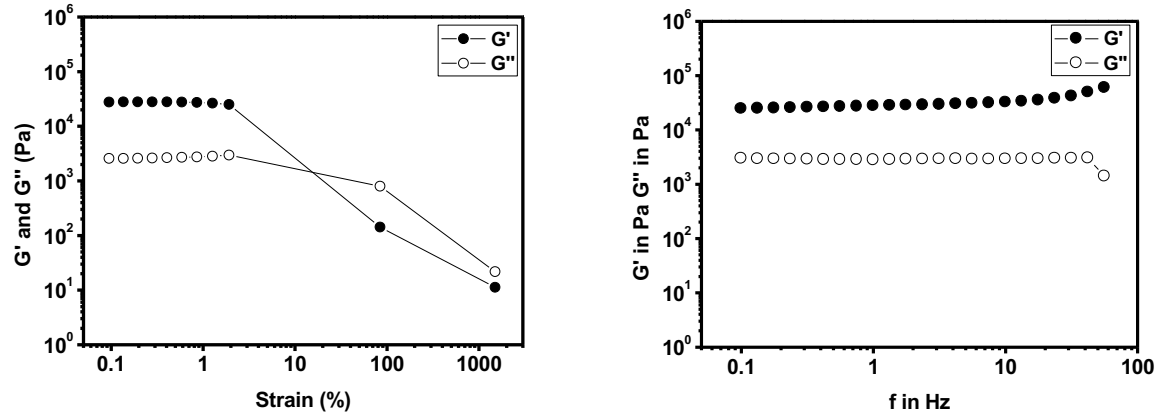

Figure S.I.99. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.05 M $ZnSO_4$.

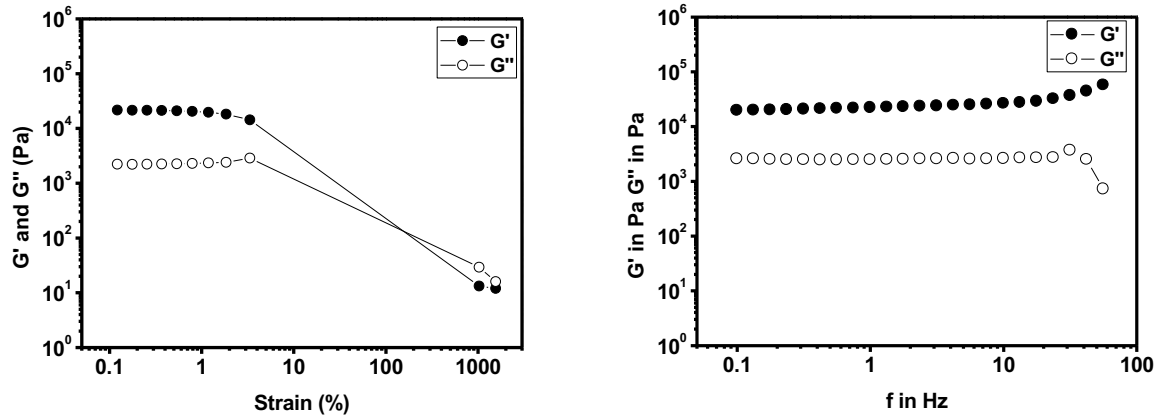

Figure S.I.100. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.1 M $ZnSO_4$.

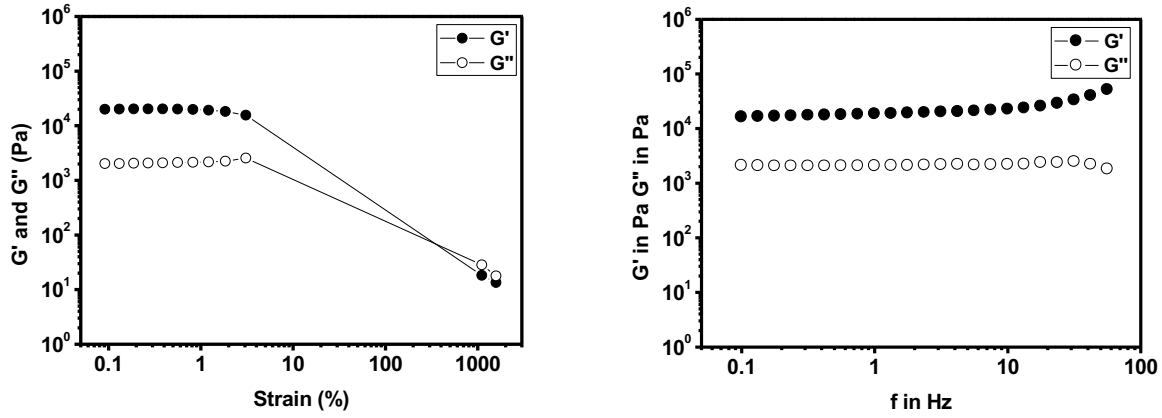

Figure S.I.101. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.2 M $ZnSO_4$.

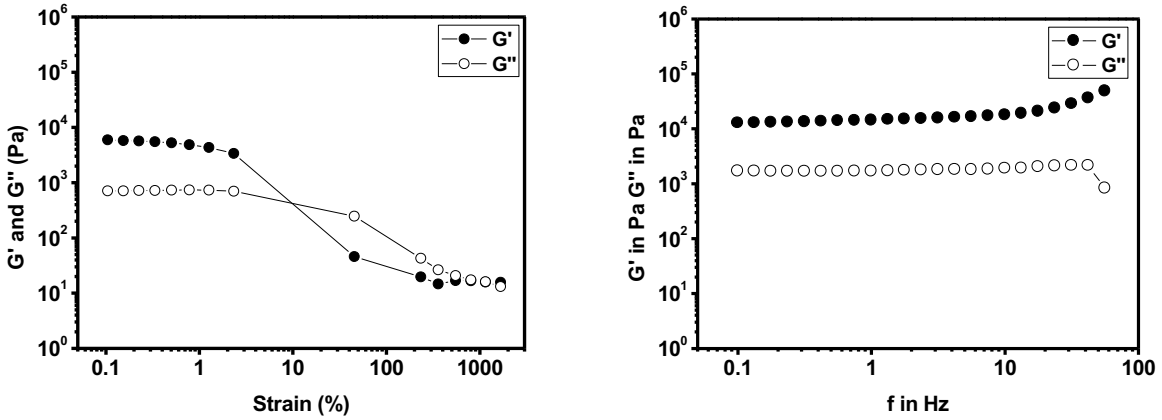

Figure S.I.102. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.3 M $ZnSO_4$.

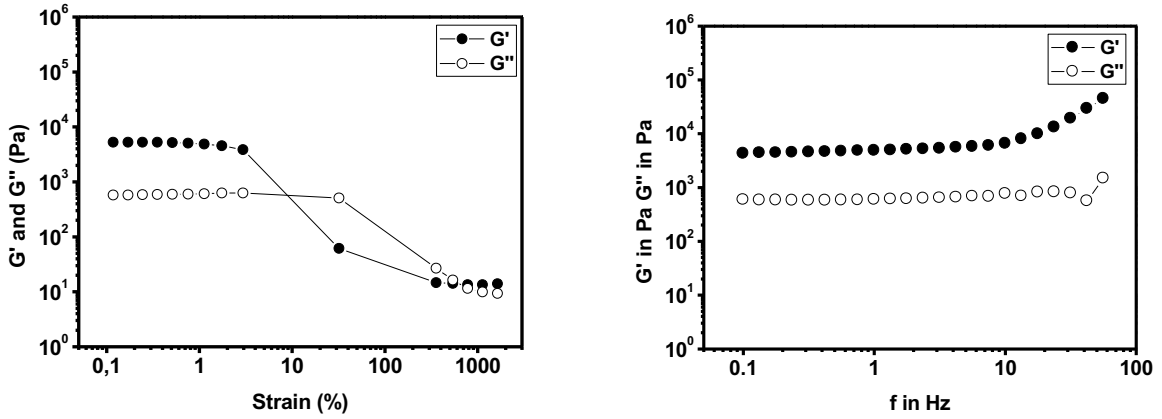

Figure S.I.103. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5ZnSO$_4$**, using 0.4 M $ZnSO_4$.

Variation of $Ca(NO_3)_2$

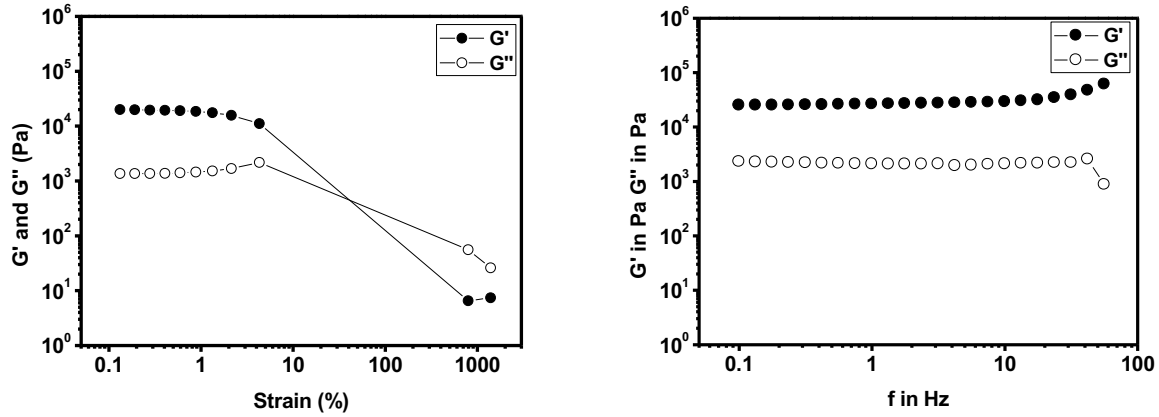

Figure S.I.104. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca$(NO_3)_2$**, using 0.01 M $Ca(NO_3)_2$.

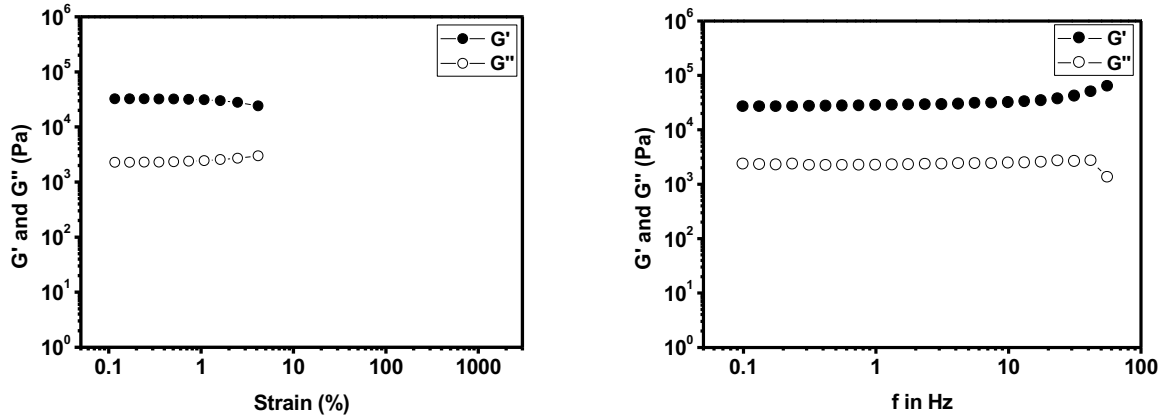

Figure S.I.105. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca$(NO_3)_2$**, using 0.03 M $Ca(NO_3)_2$.

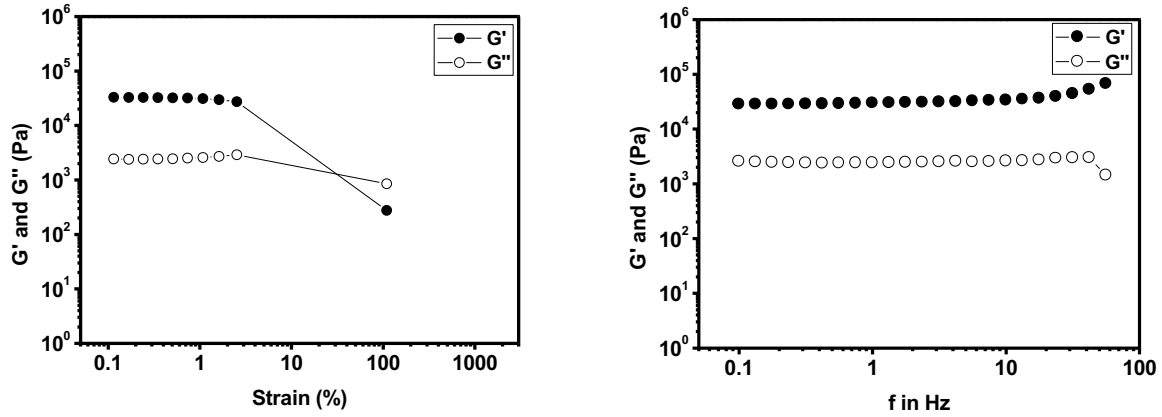

Figure S.I.106. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca$(NO_3)_2$**, using 0.04 M $Ca(NO_3)_2$.

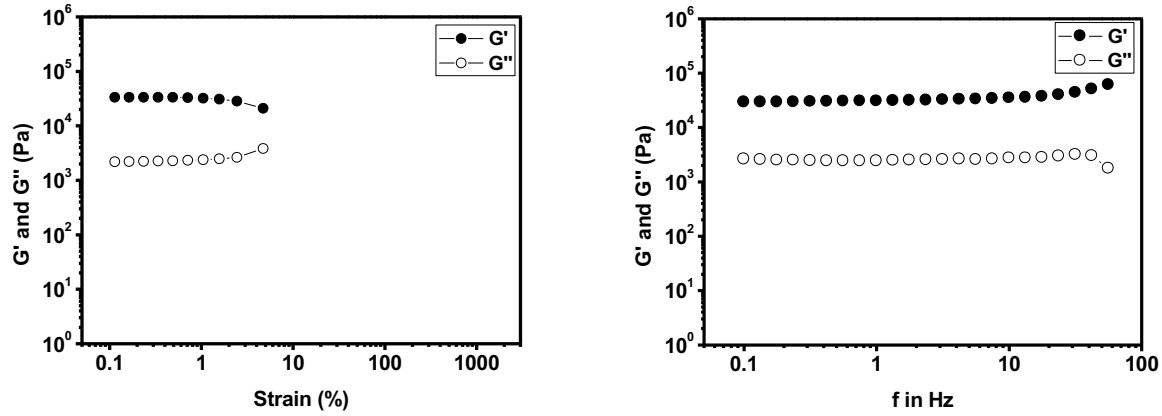

Figure S.I.107. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca(NO$_3$)$_2$**, using 0.05 M Ca(NO$_3$)$_2$.

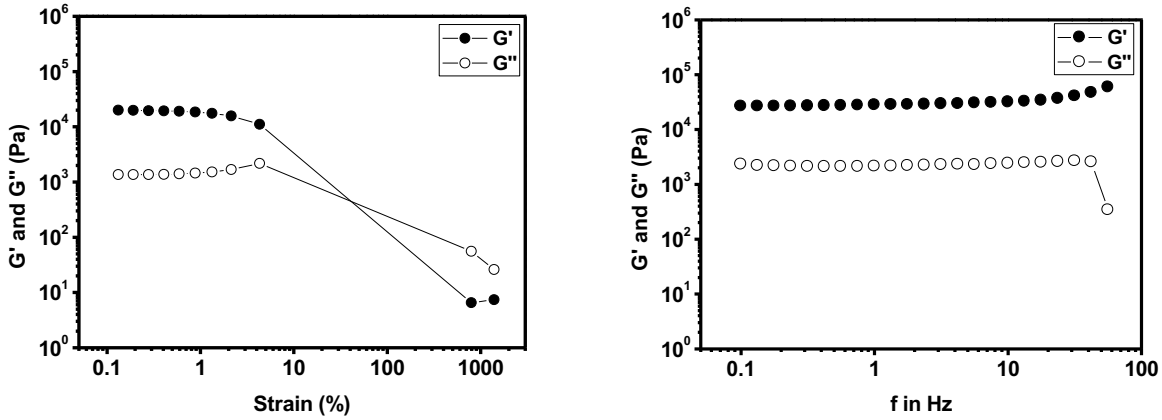

Figure S.I.108. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca(NO$_3$)$_2$**, using 0.1 M Ca(NO$_3$)$_2$.

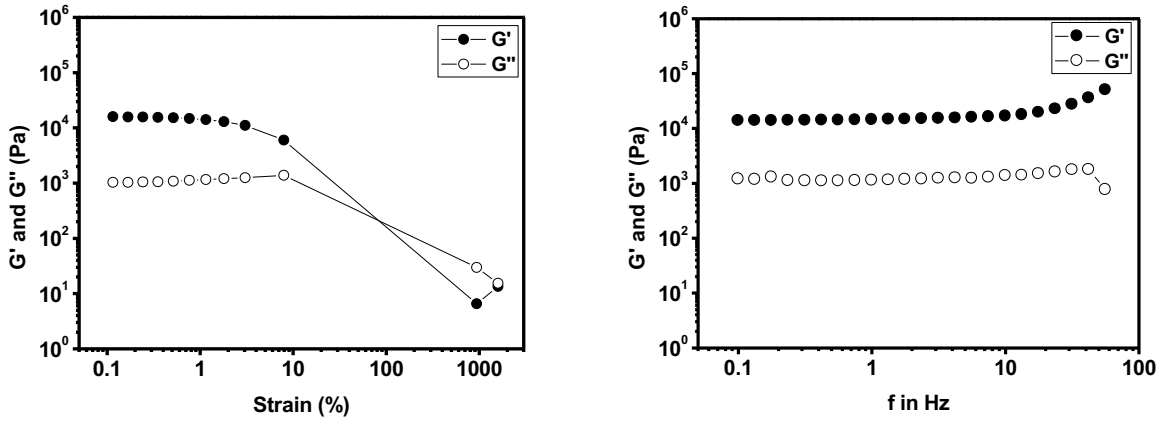

Figure S.I.109. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca(NO$_3$)$_2$**, using 0.2 M Ca(NO$_3$)$_2$.

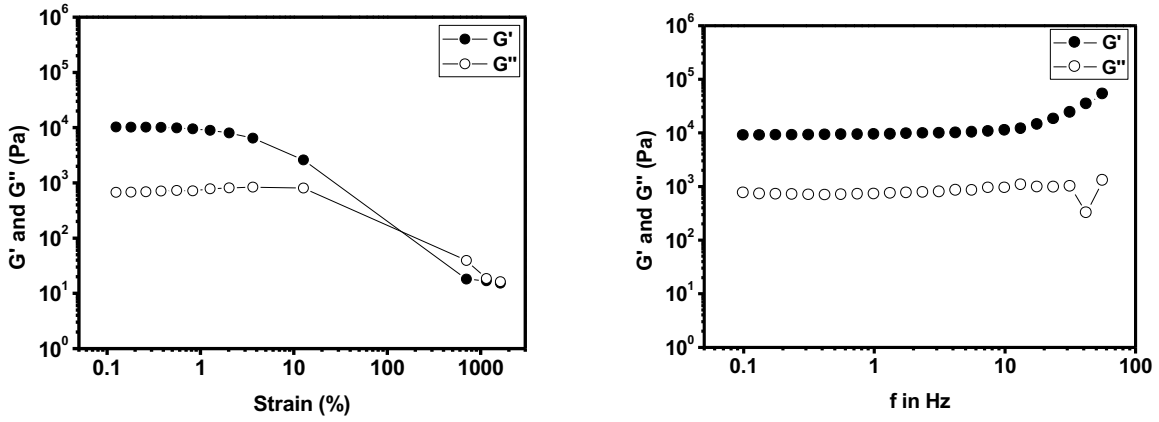

Figure S.I.110. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca(NO$_3$)$_2$**, using 0.3 M Ca(NO$_3$)$_2$.

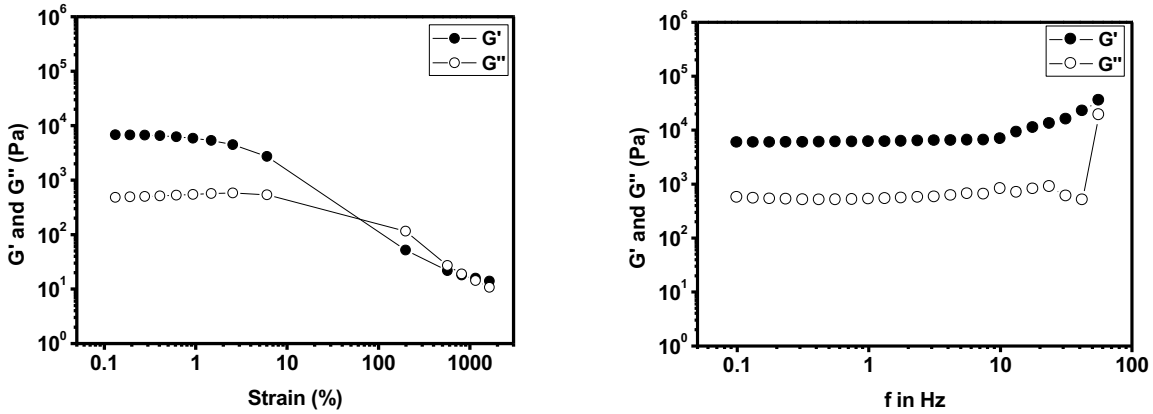

Figure S.I.111. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ca(NO$_3$)$_2$**, using 0.4 M Ca(NO$_3$)$_2$.

Variation of Ba(NO$_3$)$_2$

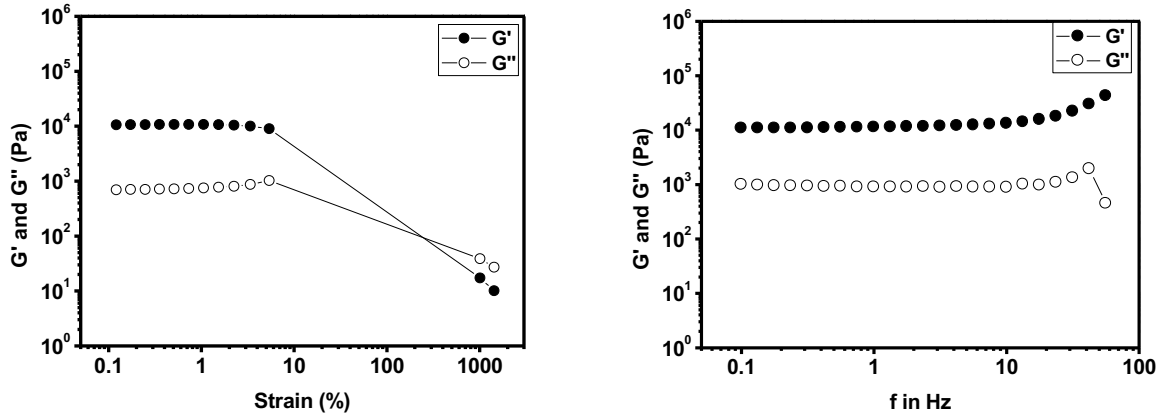

Figure S.I.112. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.01 M Ba(NO$_3$)$_2$.

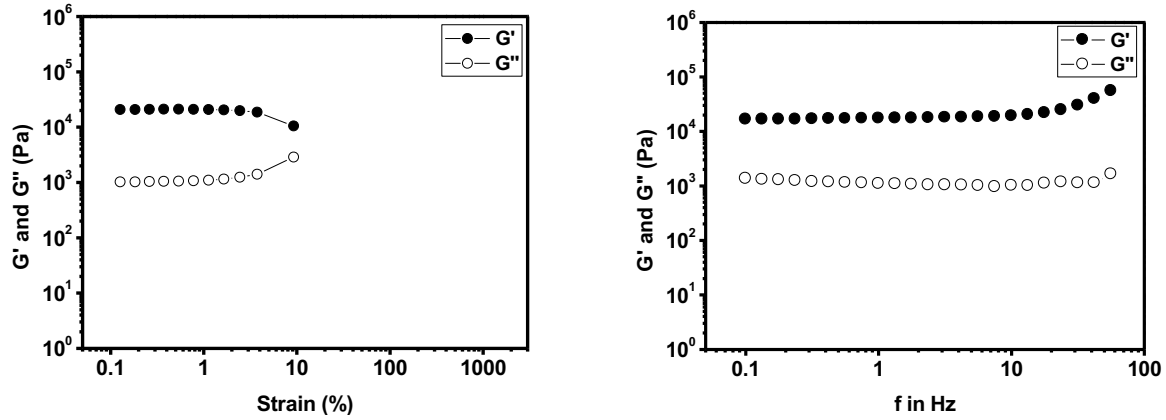

Figure S.I.113. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.03 M Ba(NO$_3$)$_2$.

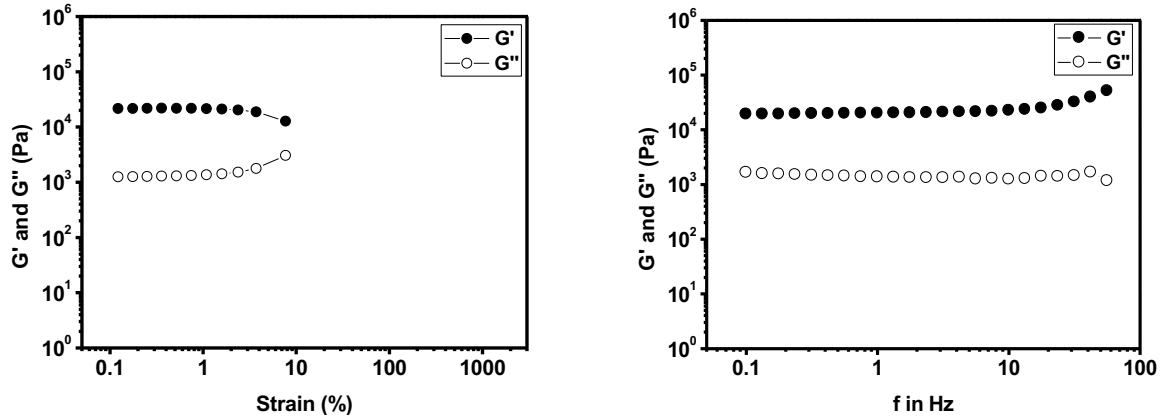

Figure S.I.114. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.04 M Ba(NO$_3$)$_2$.

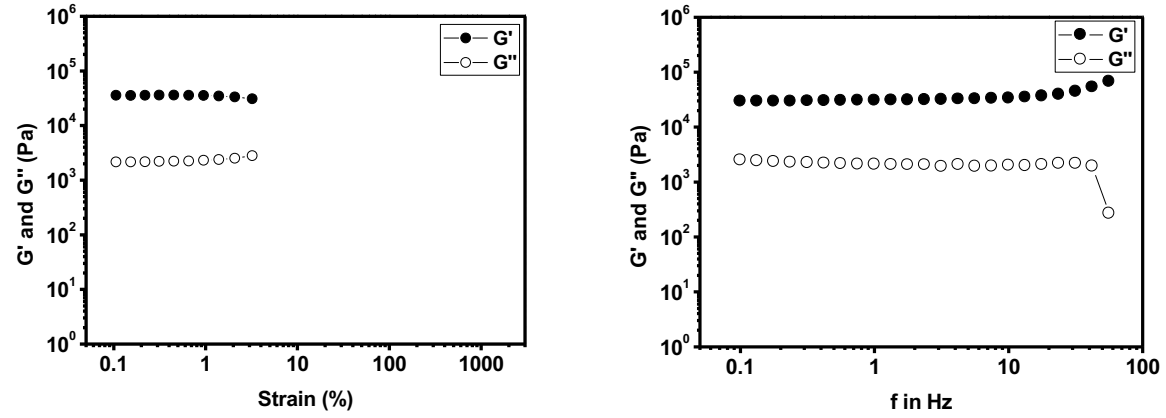

Figure S.I.115. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.05 M Ba(NO$_3$)$_2$.

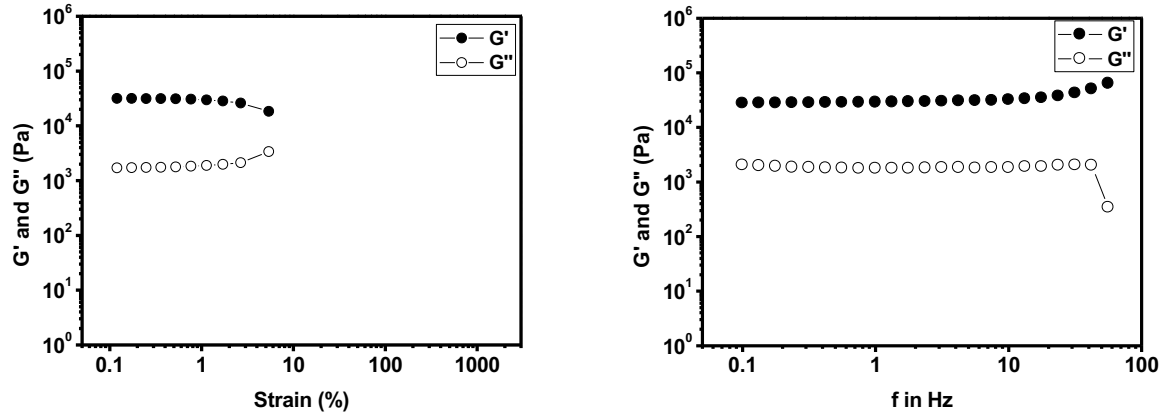

Figure S.I.116. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.1 M Ba(NO$_3$)$_2$.

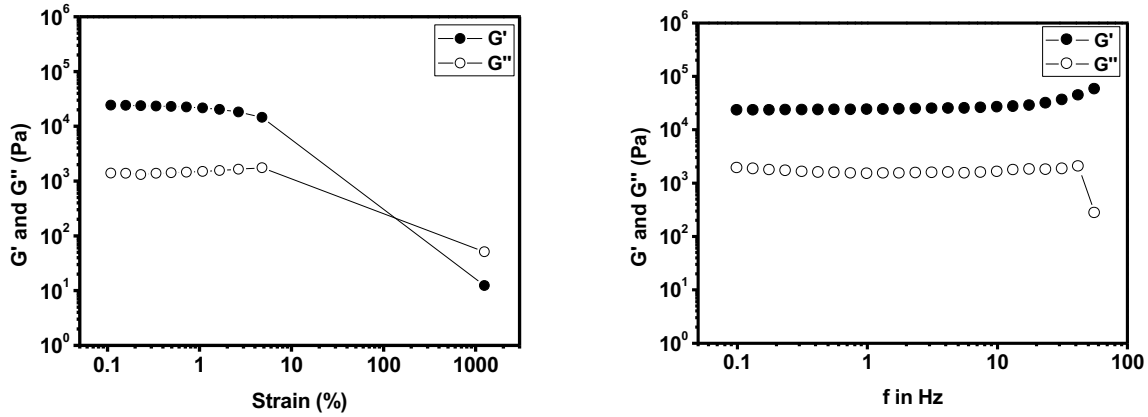

Figure S.I.117. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.2 M Ba(NO$_3$)$_2$.

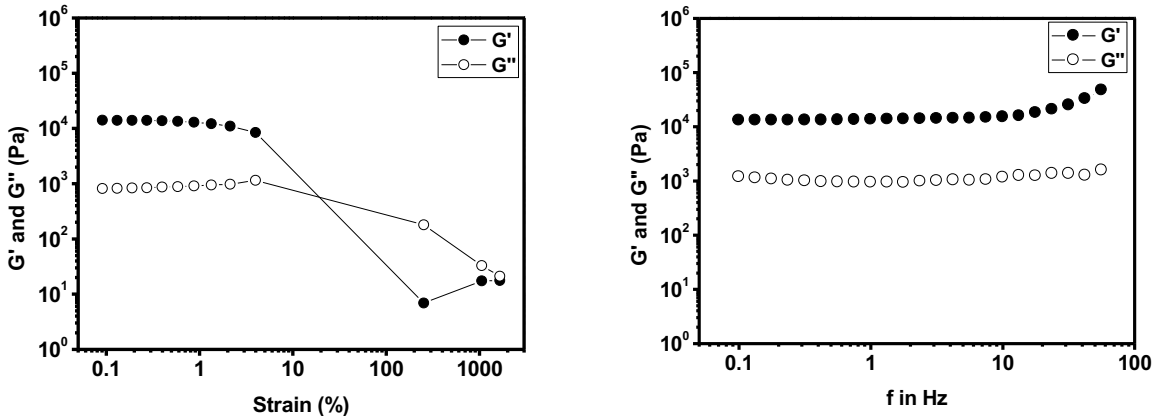

Figure S.I.118. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.3 M Ba(NO$_3$)$_2$.

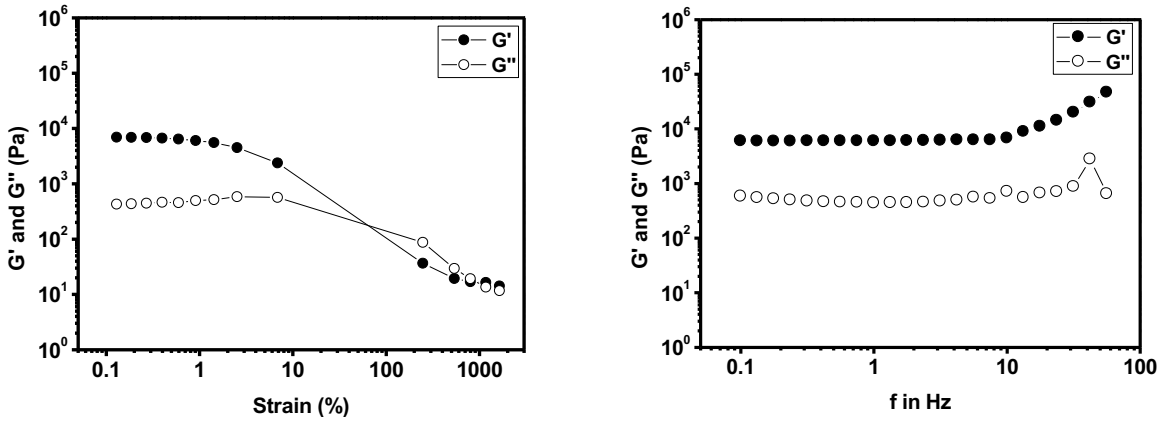

Figure S.I.119. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Ba(NO$_3$)$_2$**, using 0.4 M Ba(NO$_3$)$_2$.

Variation of Sr(NO$_3$)$_2$

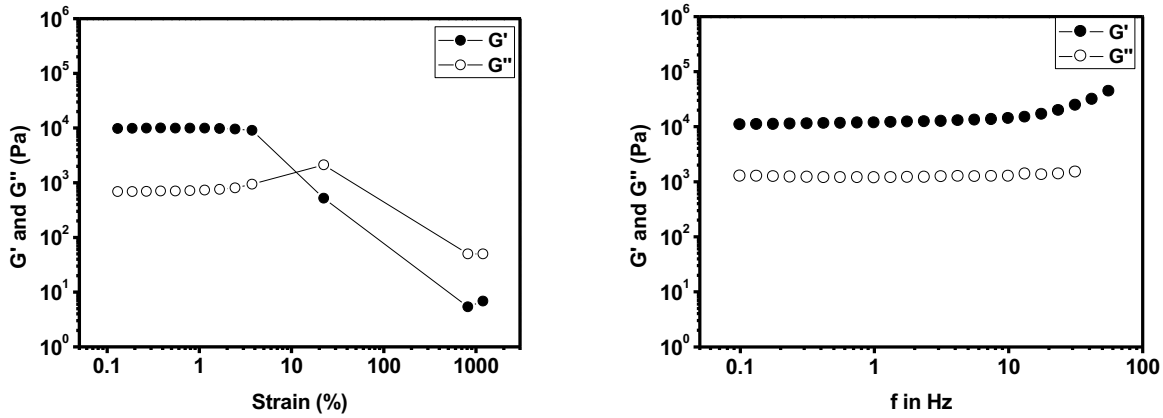

Figure S.I.120. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.01 M Sr(NO$_3$)$_2$.

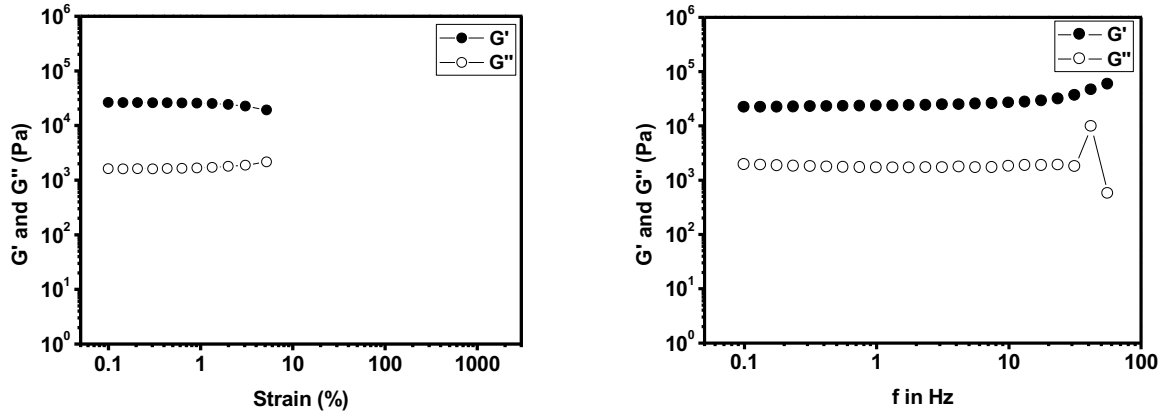

Figure S.I.121. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.03 M Sr(NO$_3$)$_2$.

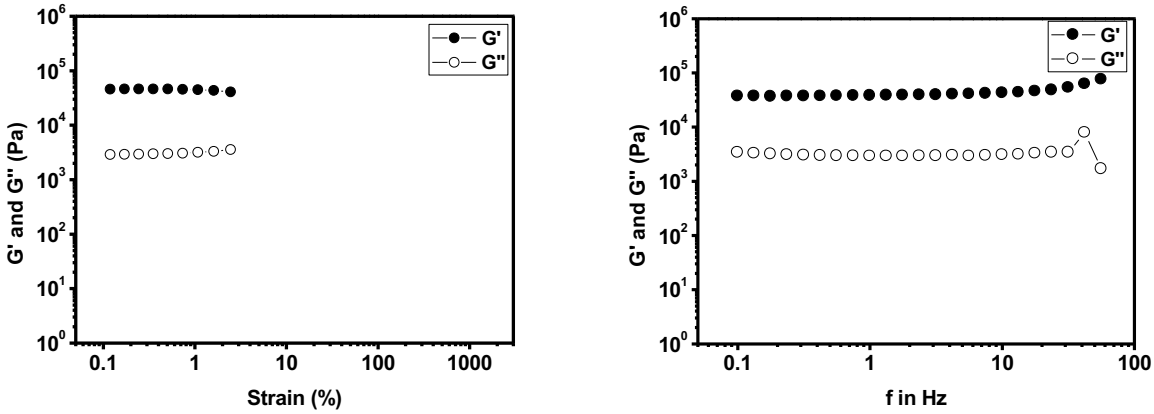

Figure S.I.122. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.04 M Sr(NO$_3$)$_2$.

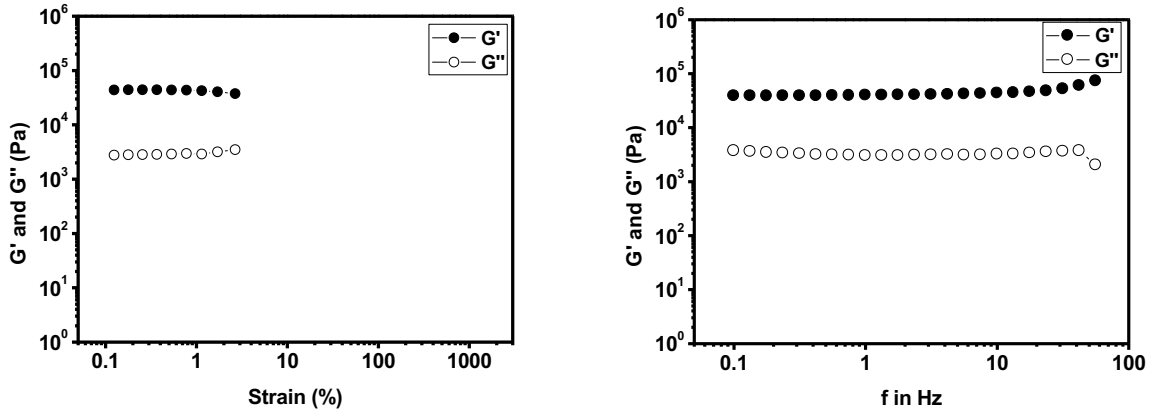

Figure S.I.123. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.05 M Sr(NO$_3$)$_2$.

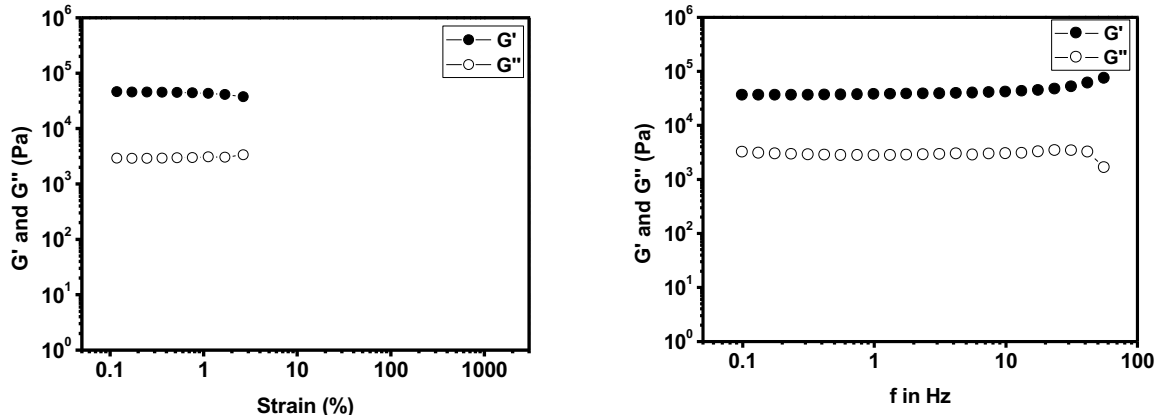

Figure S.I.124. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.1 M Sr(NO$_3$)$_2$.

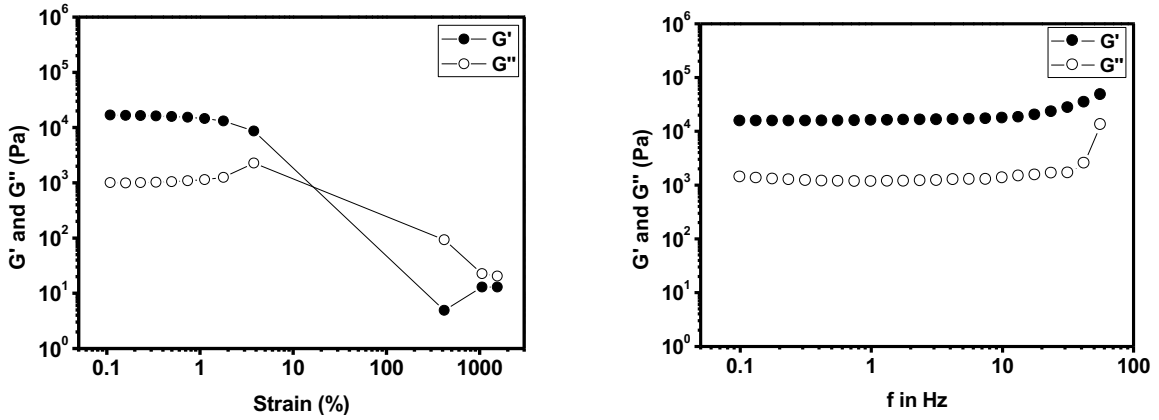

Figure S.I.125. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.2 M Sr(NO$_3$)$_2$.

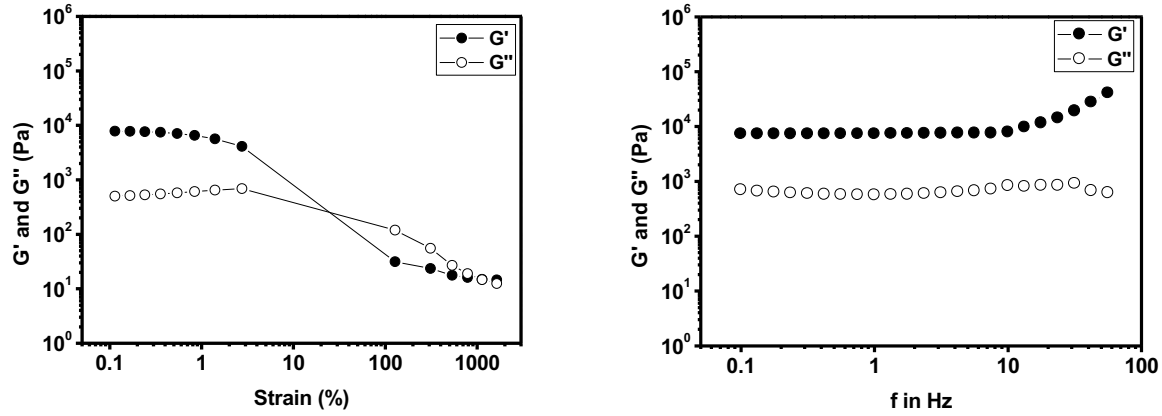

Figure S.I.126. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.3 M Sr(NO$_3$)$_2$.

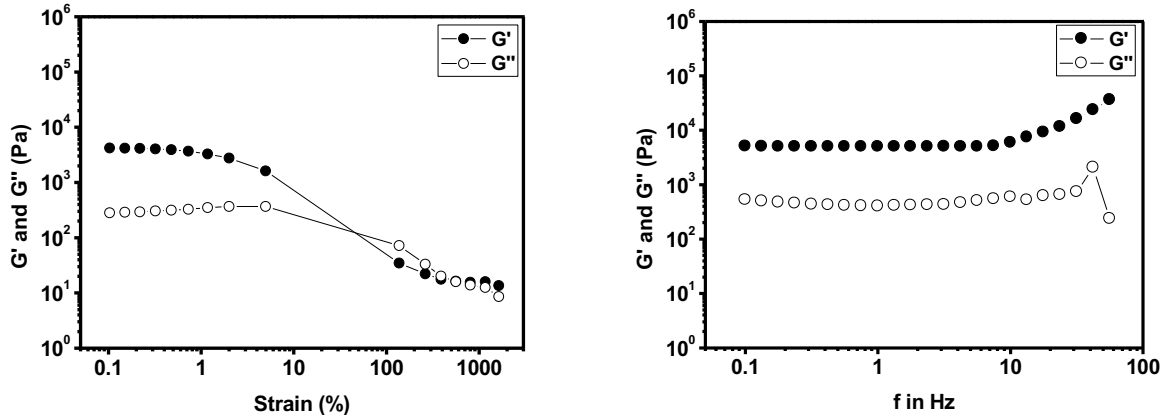

Figure S.I.127. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **HN5Sr(NO$_3$)$_2$**, using 0.4 M Sr(NO$_3$)$_2$.

Variation of $Al_2(SO_4)_3$

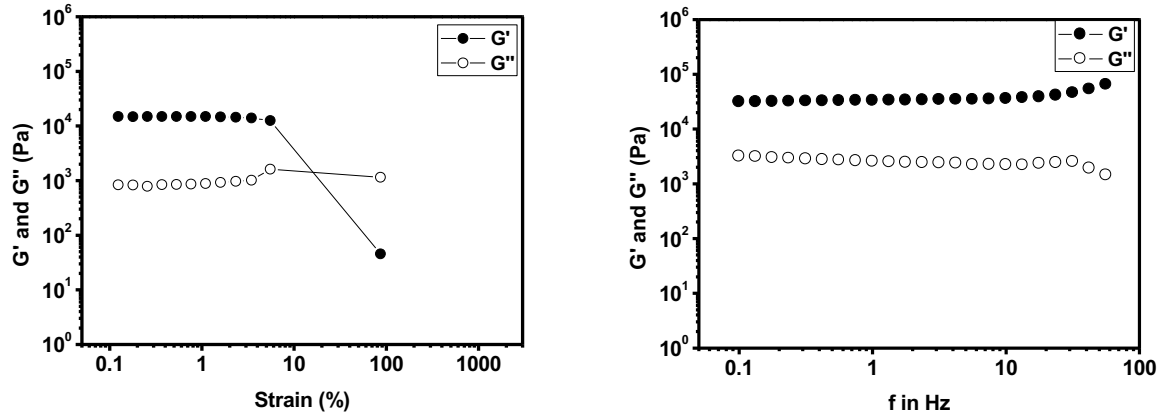

Figure S.I.128. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.01 M $Al_2(SO_4)_3$.

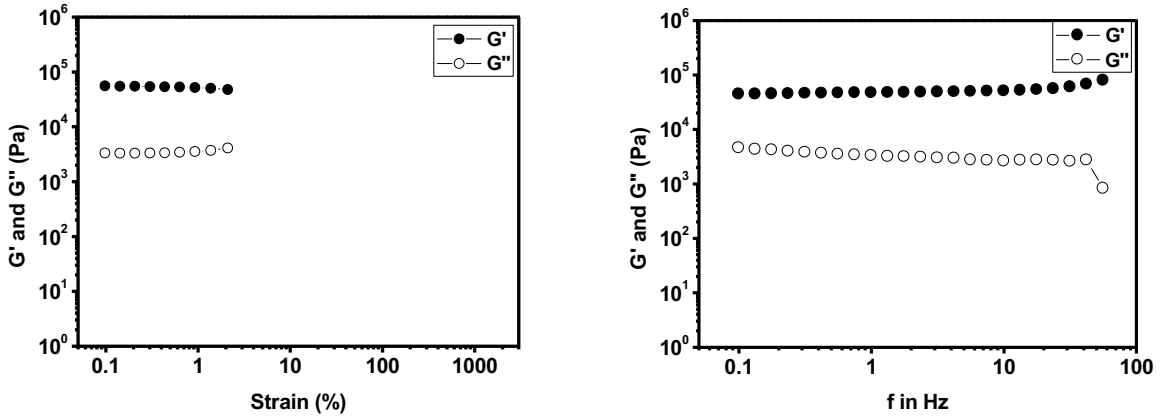

Figure S.I.129. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.03 M $Al_2(SO_4)_3$.

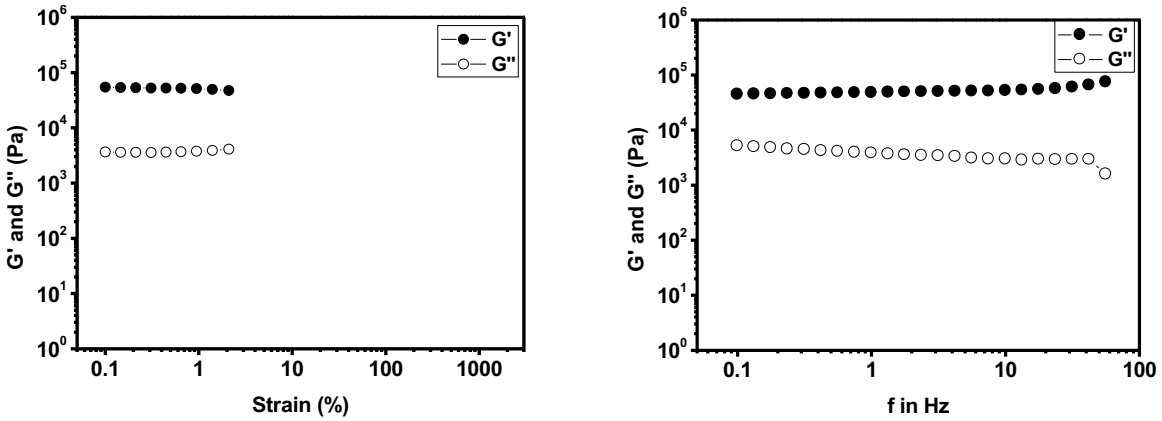

Figure S.I.130. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.04 M $Al_2(SO_4)_3$.

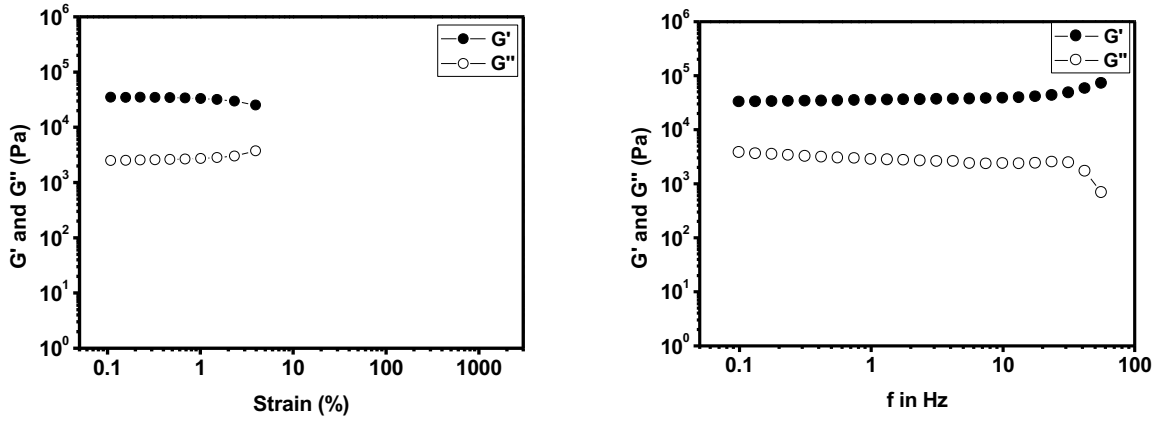

Figure S.I.131. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.05 M $Al_2(SO_4)_3$.

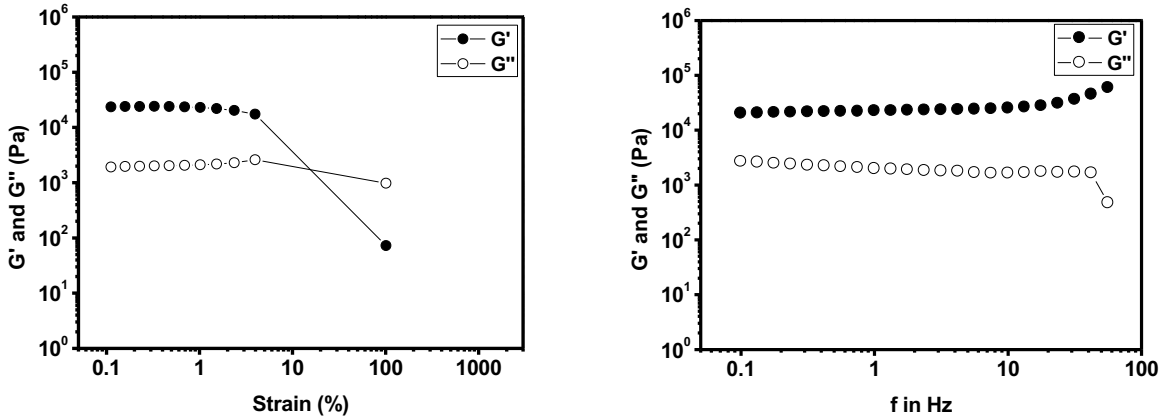

Figure S.I.132. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.1 M $Al_2(SO_4)_3$.

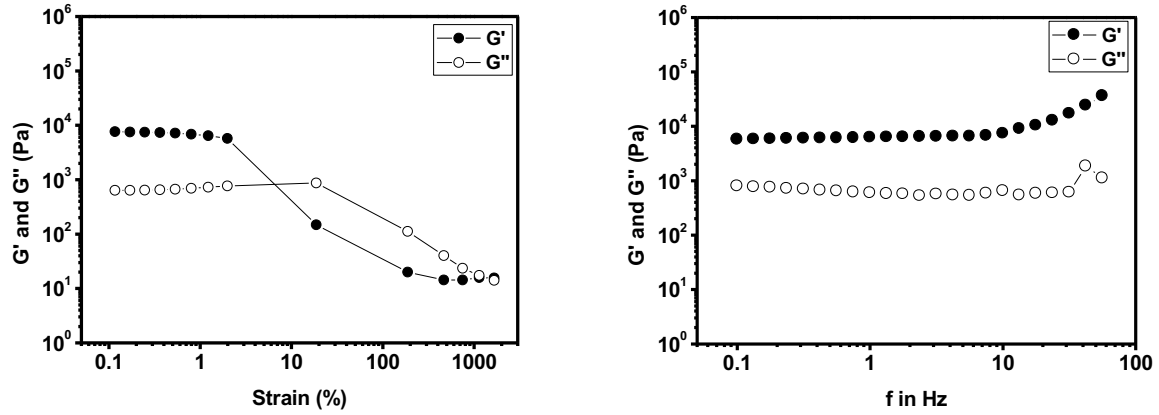

Figure S.I.133. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.2 M $Al_2(SO_4)_3$.

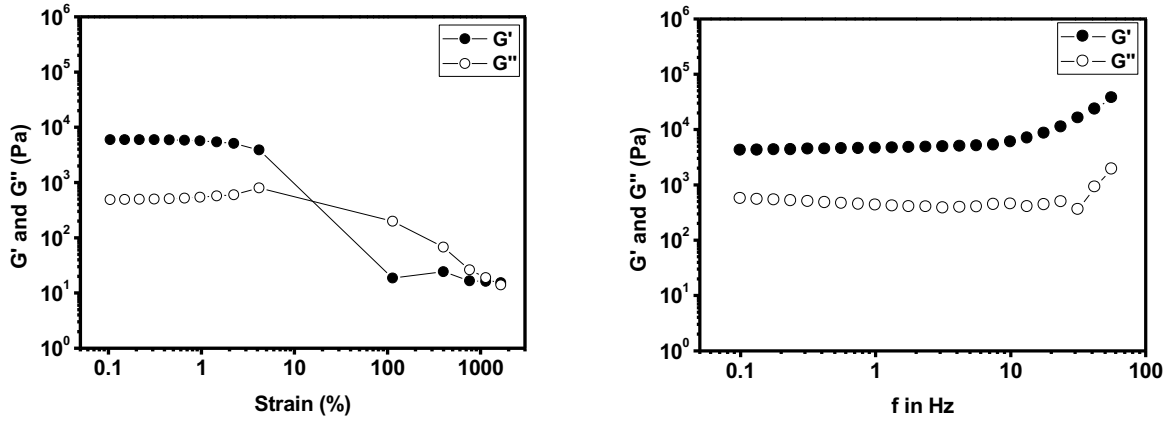

Figure S.I.134. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.3 M $Al_2(SO_4)_3$.

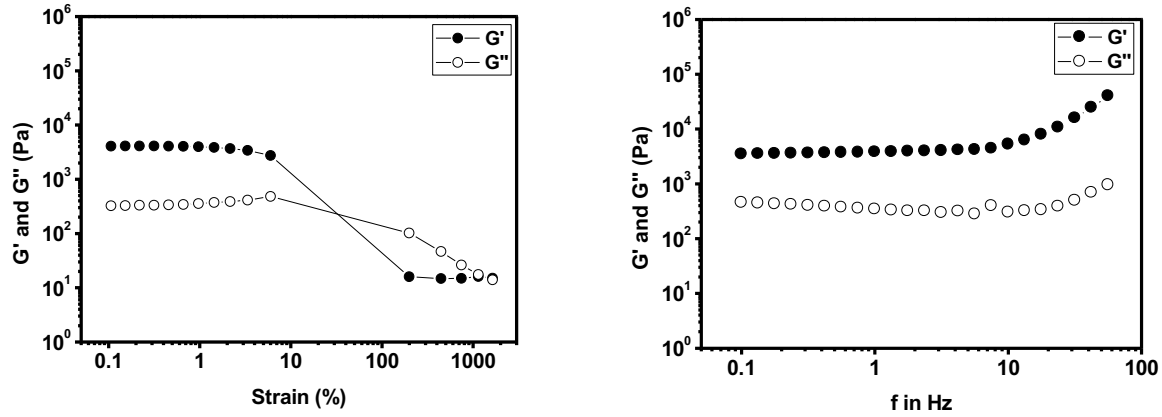

Figure S.I.135. Data obtained on Strain Sweep test (left) and Frequency Sweep test (right) for **$HN5Al_2(SO_4)_3$**, using 0.4 M $Al_2(SO_4)_3$.

SAXS data

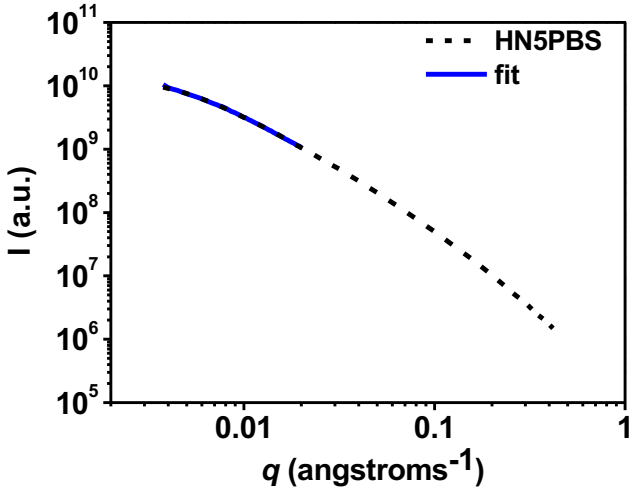

Figure S.I.136. SAXS data obtained for **HN5PBS** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.2 (blue line).

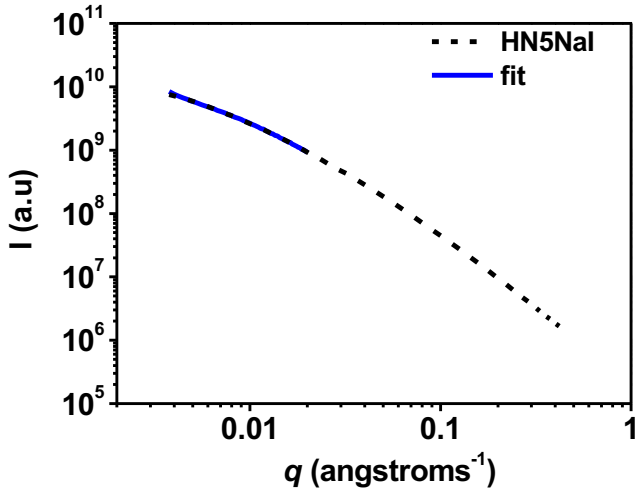

Figure S.I.137. SAXS data obtained for **HN5NaI** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=1.9 (blue line).

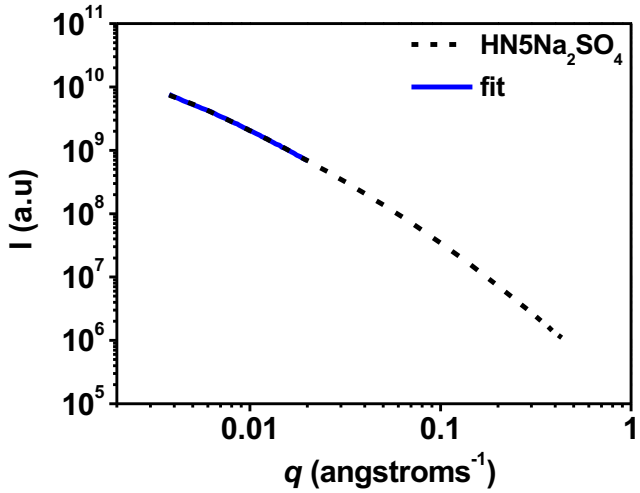

Figure S.I.138. SAXS data obtained for **$HN5Na_2SO_4$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.0 (blue line).

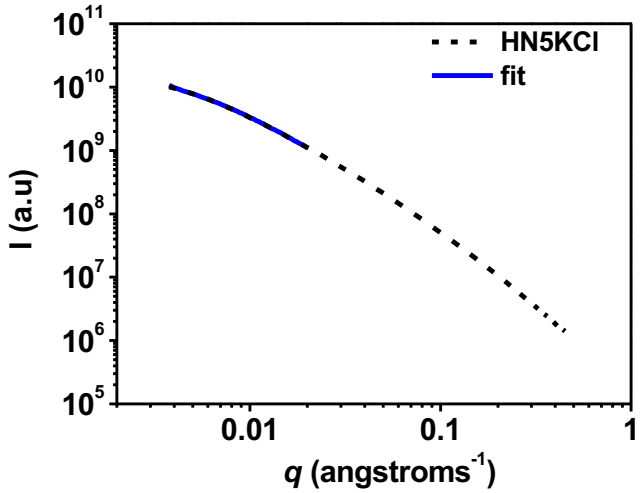

Figure S.I.139. SAXS data obtained for **HN5KCl** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.2 (blue line).

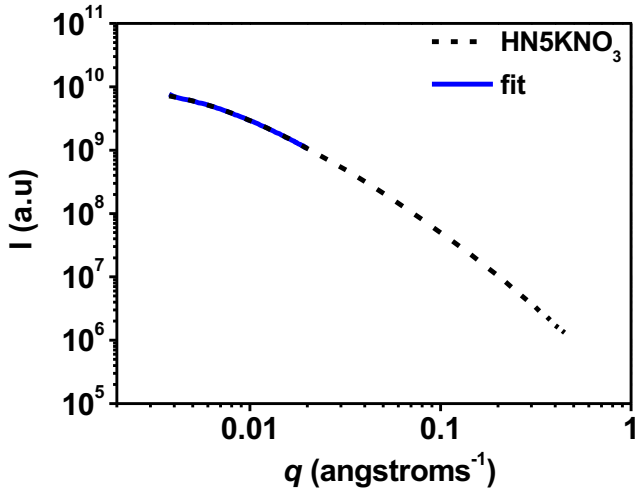

Figure S.I.140. SAXS data obtained for **$HN5KNO_3$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.1 (blue line).

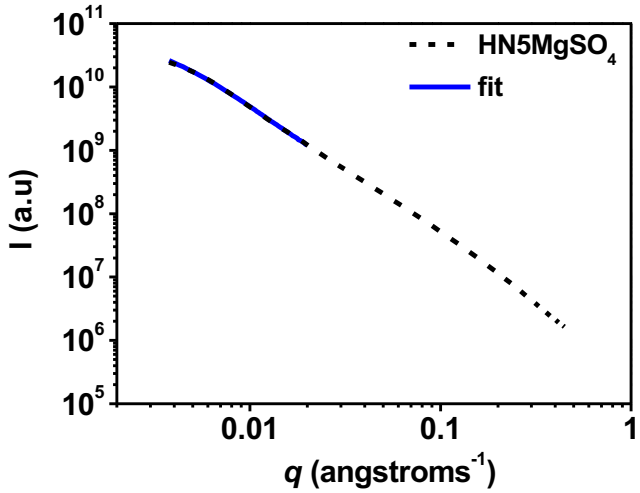

Figure S.I.141. SAXS data obtained for **$HN5MgSO_4$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.8 (blue line).

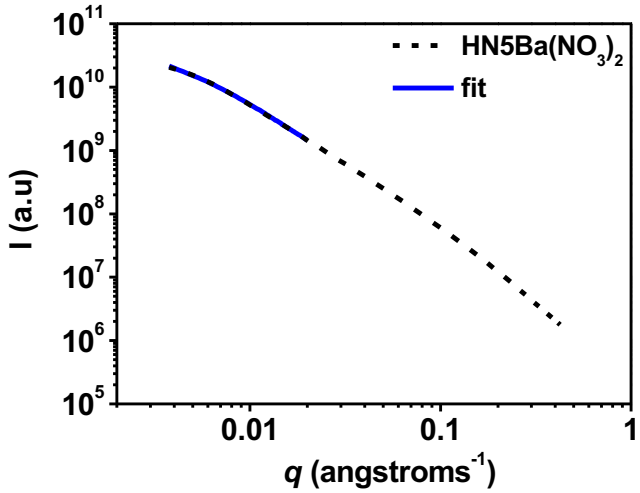

Figure S.I.142. SAXS data obtained for **$HN5Ba(NO_3)_2$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.6 (blue line).

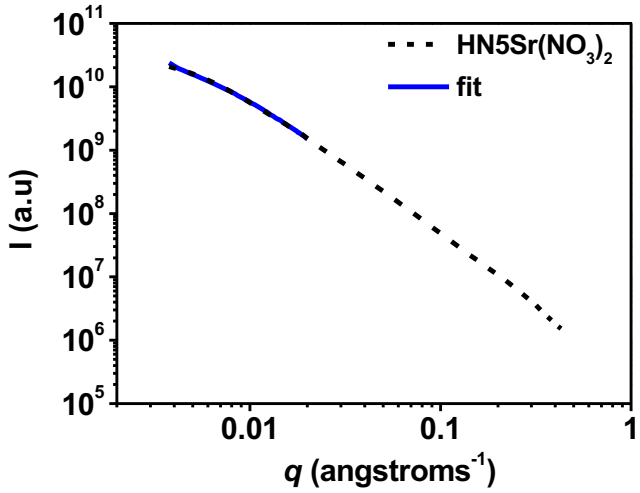

Figure S.I.143. SAXS data obtained for **$HN5Sr(NO_3)_2$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.7 (blue line).

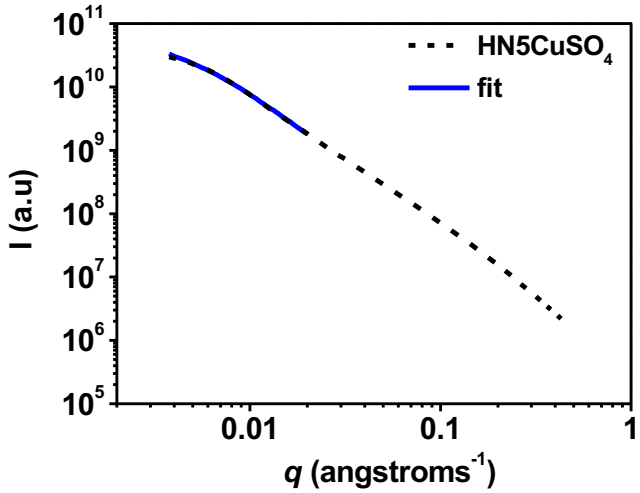

Figure S.I.144. SAXS data obtained for **$HN5CuSO_4$** (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=3.2 (blue line).

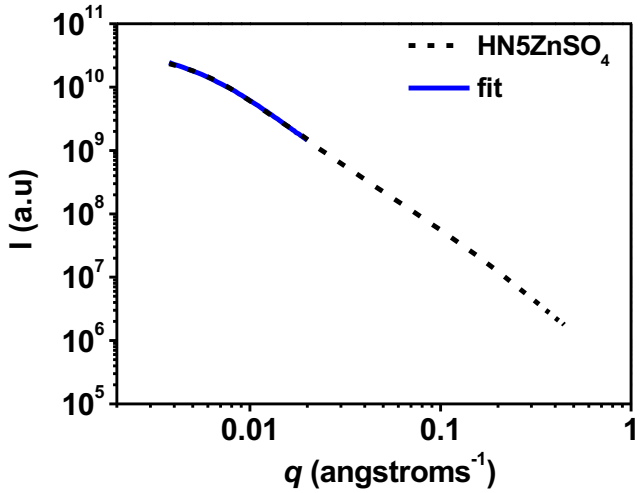

Figure S.I.145. SAXS data obtained for $HN5ZnSO_4$ (black dots), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=3.1 (blue line).

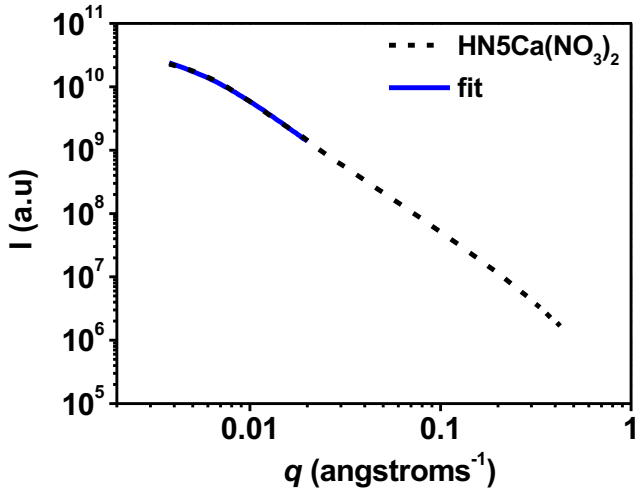

Figure S.I.146. SAXS data obtained for **$HN5Ca(NO_3)_4$** (in blue), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=3.31.

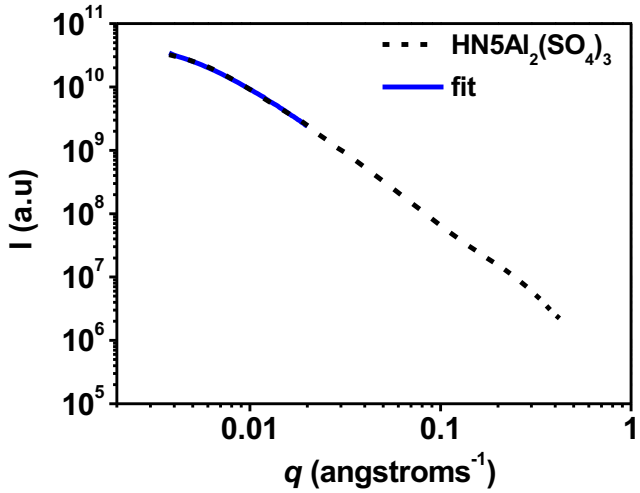

Figure S.I.147. SAXS data obtained for **$HN5Al_2(SO_4)_3$** (in blue), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=3.0.

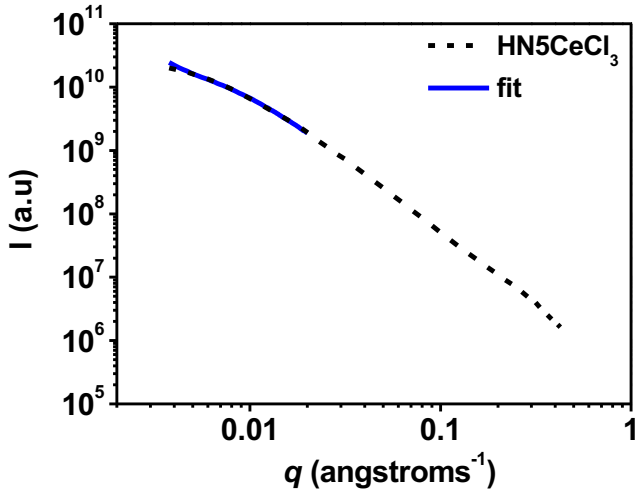

Figure S.I.148. SAXS data obtained for **$HN5CeCl_3$** (in blue), and fit curve obtained on SASFit for a model of a monodisperse flat cylinder with 9.5 nm radius, 0.9 nm width and a mass fractal structure with D=2.8.