Electronic Supplementary Material (ESI) for RSC Advances.

Oleogelation using pulse protein-stabilized foam and their potential as a baking ingredient

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Supplementary Data

Figure S1

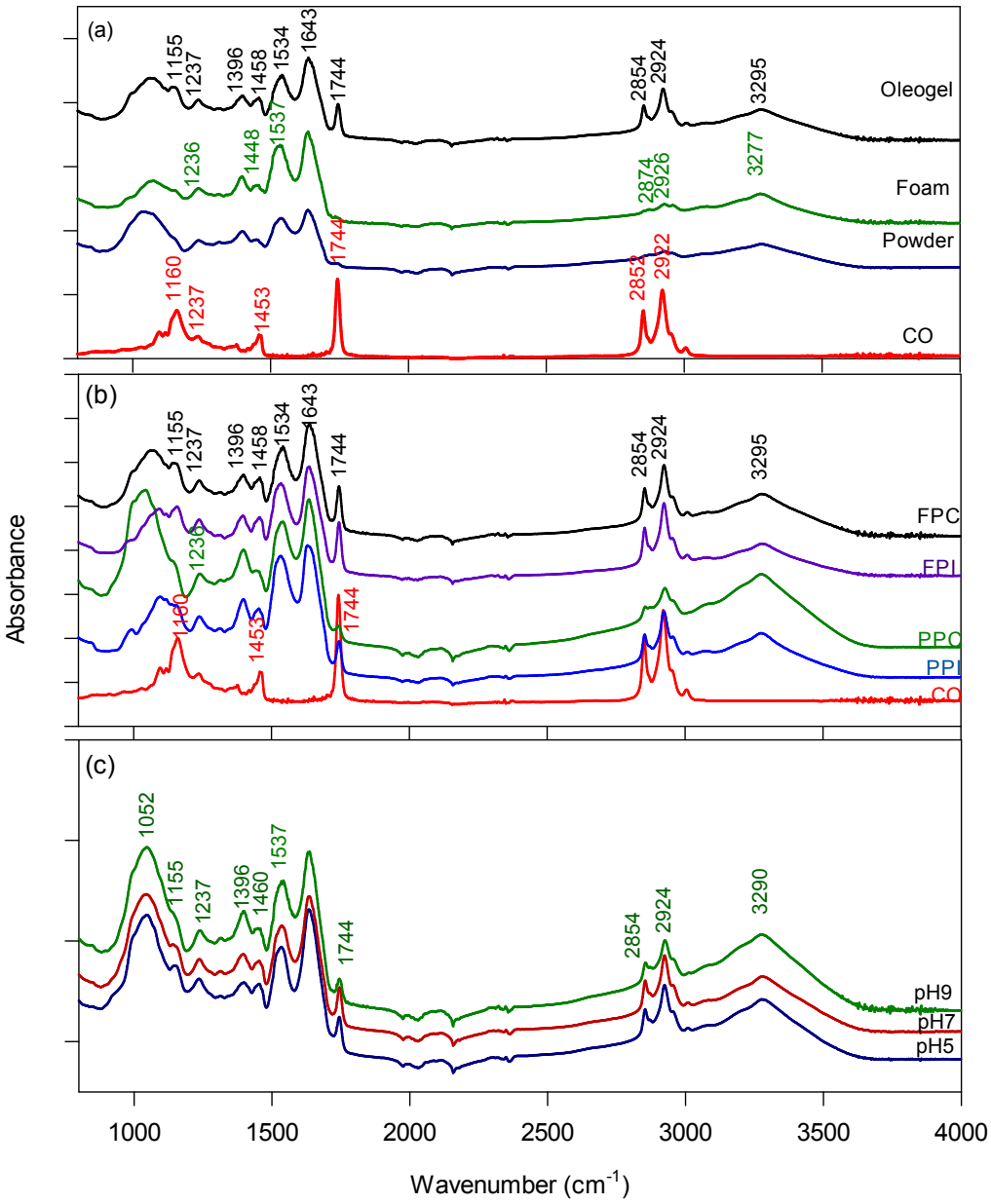

Figure S1. FTIR spectra of (a) FPC and xanthan gum (FPC-XG) mixed powder, foam and oleogel at pH 9 in comparison with canola oil (CO); (b) all protein-XG oleogels prepared foams made at pH 9; and (c) FPC-XG oleogels at made with foams at different pH values.

Table S1. Selected ATR-FTIR peaks of different foam, oleogel and Canola oil which displayed a shift during oleogel formation

Sample		Symmetric CH_2	Antisymmetric CH_2	-OH	amide II	amide I
PPI-XG-pH9	Foam	2854	2959	--	1529	1641
	Oleogel	2853	2924	3282	1529	1642
PPC-XG-pH9	Foam	--	2925	--	1535	1643
	Oleogel	2854	2924	3295	1533	1644
FPI-XG-pH9	Foam	2874	2959	3287	1530	1640
	Oleogel	2853	2924	3290	1529	1624
FPC-XG-pH9	Foam	2874	2926	3286	1534	1643
	Oleogel	2875	2924	3290	1534	1643
FPC-XG-pH7	Foam	--	--	3287	1537	1641
	Oleogel	2854	2925	3295	1530	1641
FPC-XG-pH5	Foam	--	--	3282	1531	1643
	Oleogel	2854	2924	3294	1532	1642

Figure S2

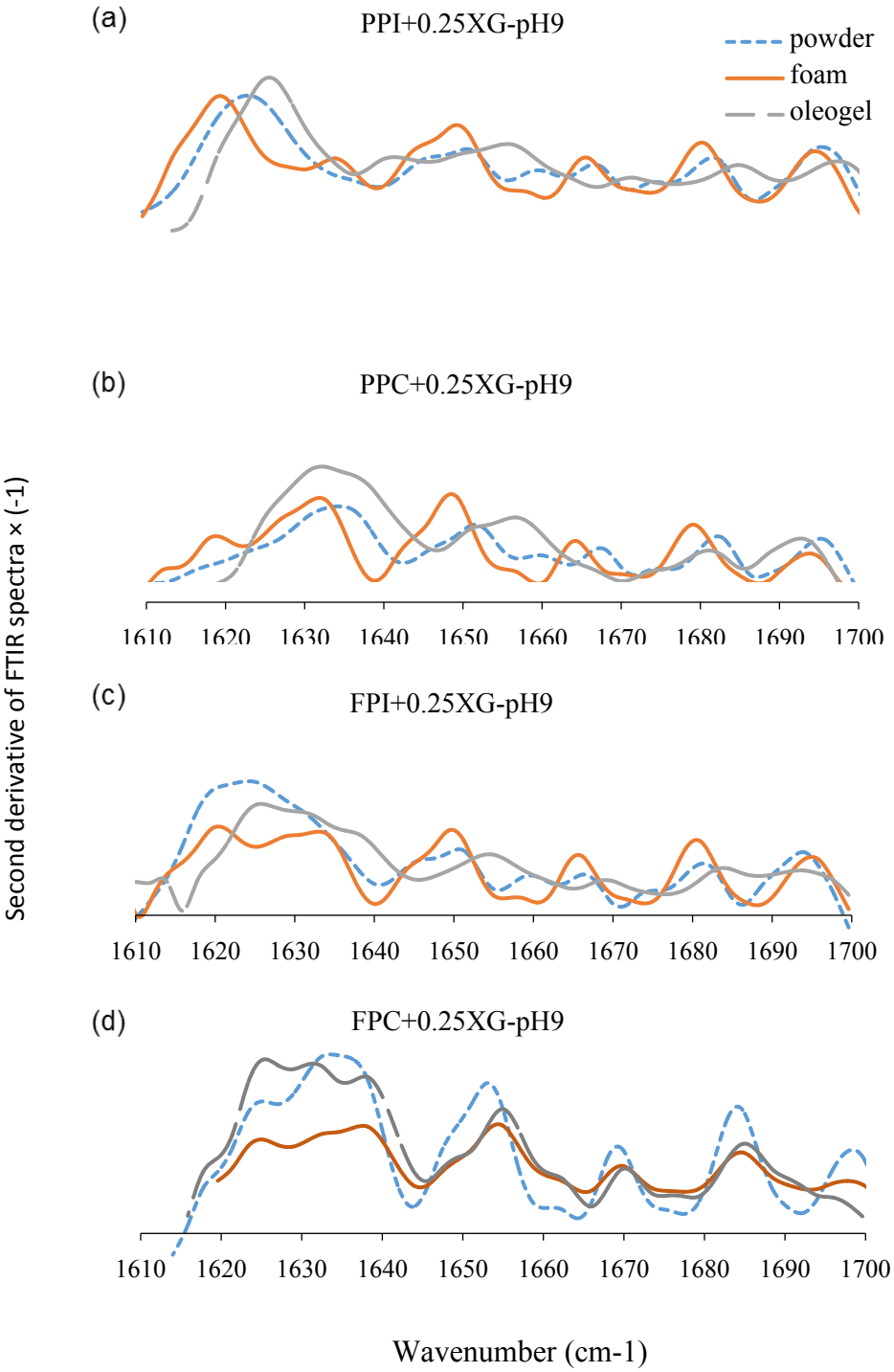
(a)
PPI+0.25XG-pH9
powder
foam
oleogel
(b)
PPC+0.25XG-pH9
(c)
FPI+0.25XG-pH9
(d)
FPC+0.25XG-pH9
Second derivative of FTIR spectra × (-1)
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
Wavenumber (cm-1)

Figure S2. Second derivative infrared spectra of different protein powders, foams and oleogels prepared at pH 9 with (a) PPI, (b) PPC, (C) FPI and (d) FPC. Second derivative spectrum was multiplied by -1 before plotting.

Figure S3

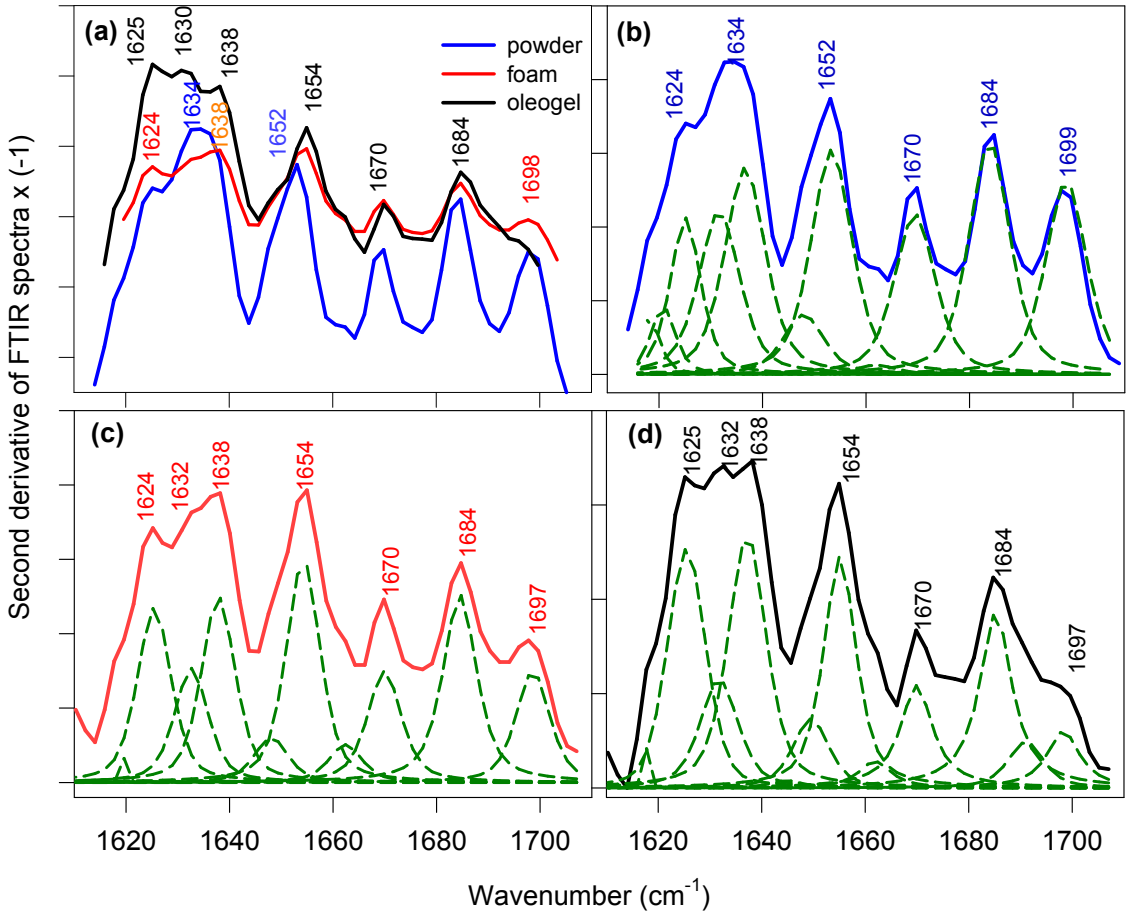

Figure S3: Examples of (a) second derivative of FTIR spectra of mixed powder, foam and oleogel prepared with FPC-XG at pH 9 deconvoluted by curve fitting to the second derivative amide I band of FPC-XG (b) powder, (c) foam and (d) oleogel at pH 9 are also shown. The second derivative spectra were multiplied with -1. The de-convoluted peaks are shown in dashed green lines. The curve fitting was performed using WiRE.3 software.

Figure S4

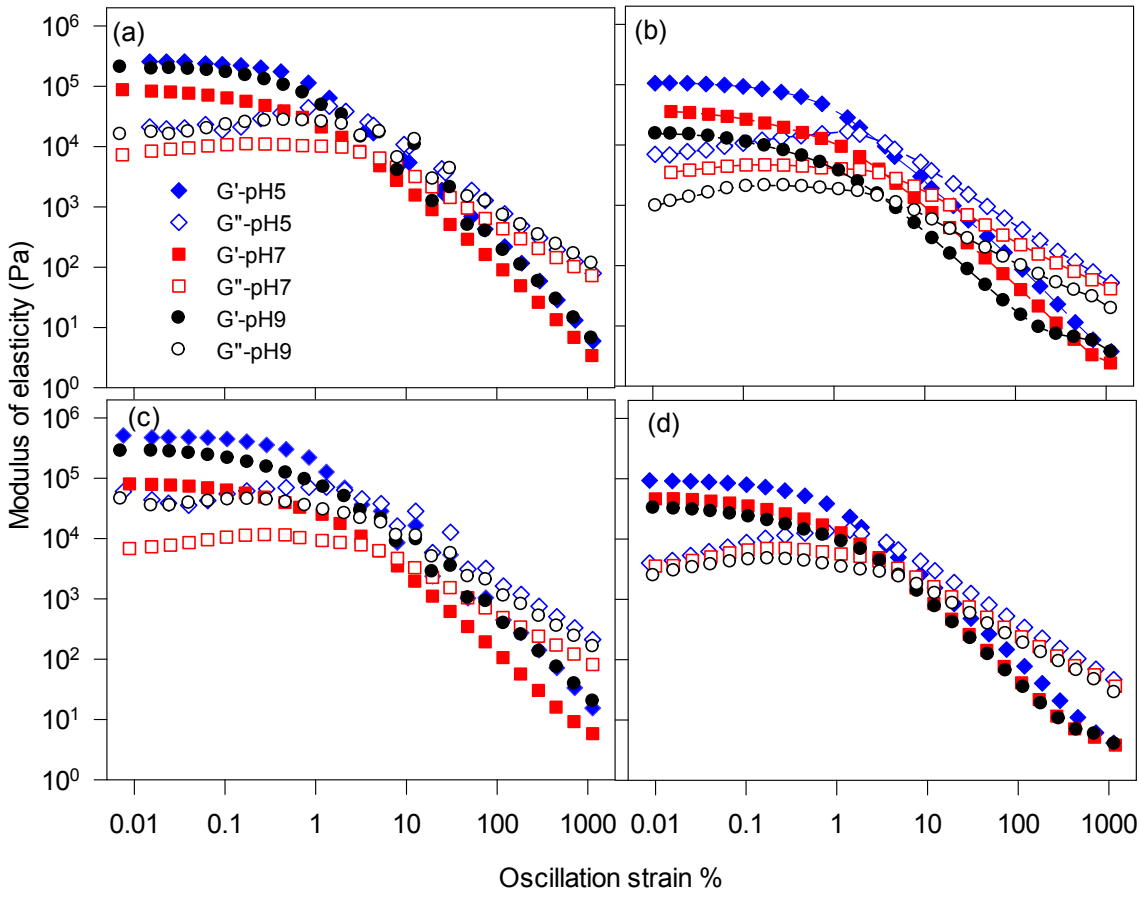

Figure S4: Strain-sweep viscoelasticity of foam-templated oleogels stabilized by (a) PPI, (b) PPC, (c) FPI and (d) FPC with XG foams prepared at different pH values measured as a function of % strain at a constant frequency of 1 Hz. Error bars were removed for clarity.

Figure S5

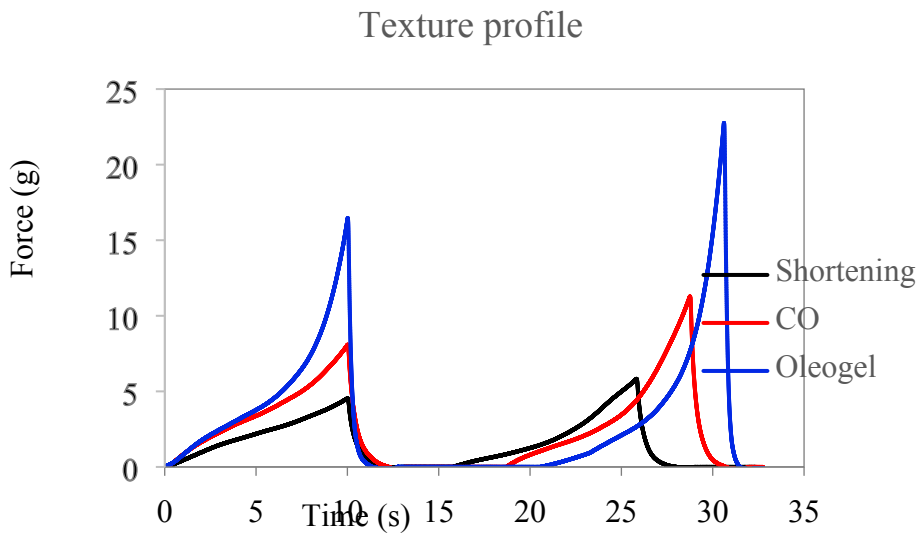

Figure S5: Examples of texture profile graphs obtained for different batters made with shortening, canola oil (CO), and the oleogel.