

Analysis of polyphosphoric acid used for food additive

Poly-phosphoric acid, a foodstuff additive, was detected by visible light absorption at 830 nm by post-column derivatization as a molybdenum-phosphorus complex.

Fig. 1 shows the system configuration schematic.

Fig. 2 shows chromatograms from meta-phosphoric acid (P1), pyro-phosphoric acid (P2) and tripoly-phosphoric acid (P3) analyzed by isocratic elution.

Fig. 3 shows the chromatogram of poly-phosphoric acid with degree of polymerization greater than 10 using gradient elution analysis.

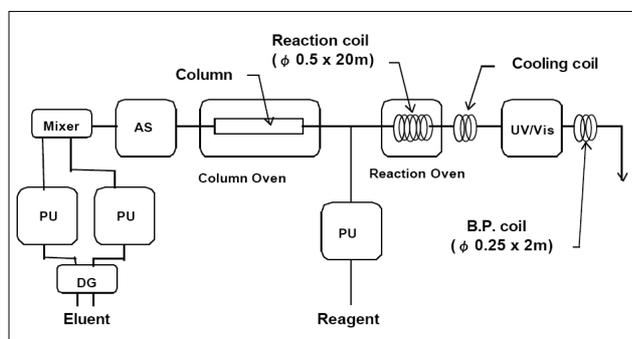


Fig. 1 system configuration schematic.

Conditions:

Column:	Finepak GEL SA-121
Eluent:	A: 0.1M KCl+1% EDTA-4Na(pH10) B: 1M KCl+1% EDTA-4Na(pH10)
Time(min)	A/B
0	100/0
30	60/40
40	0/100
45	0/100
45.1	100/0
Eluent flow rate:	1.0mL/min
Column temperature:	60 degree celsius
Reagent :	5g (NH ₄)Mo ₇ /4H ₂ O+0.6g Zn in 1.8M H ₂ SO ₄
Reagent flow rate:	0.5mL/min
Reaction temperature:	140 degree celsius
Wavelength:	830nm
Sample:	polyphosphoric acid
Injection volume:	20μL

Keywords: 1. polyphosphoric acid, 2. food additives, 3. SA-121, 4. Vis, 5. Postcolumn derivatization

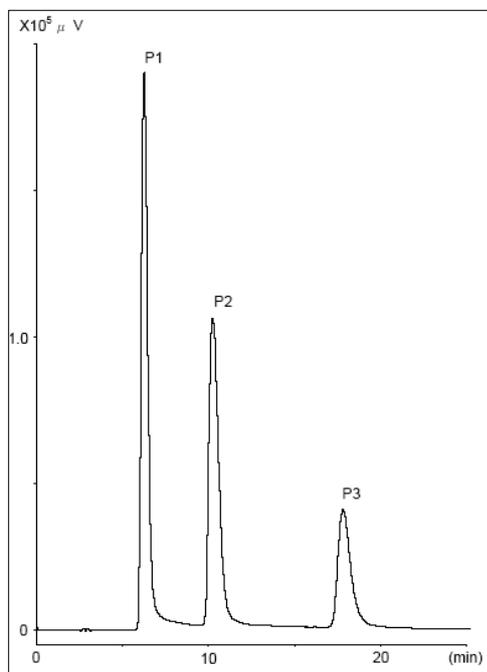


Fig. 2 phosphoric acid (P1~P3) analysis (mobile phase A)

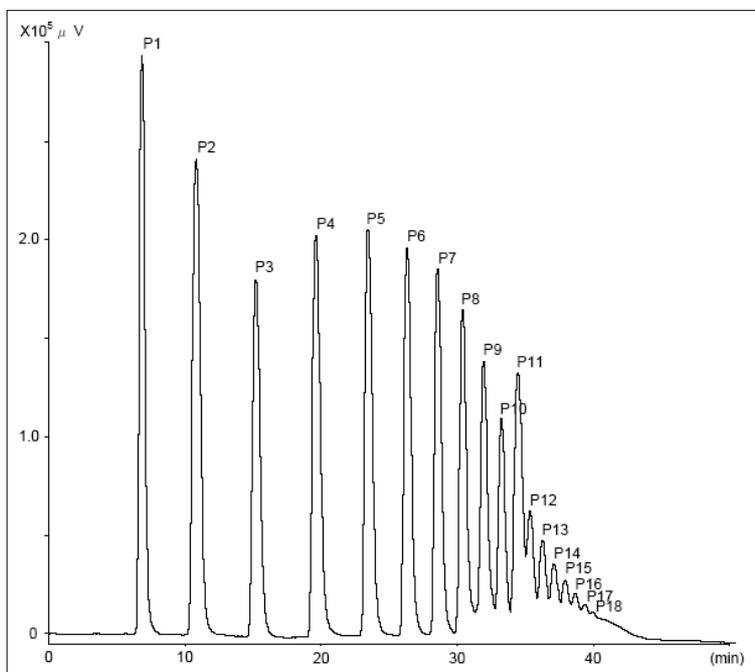


Fig. 3 poly-phosphoric acid analysis (mobile phase A/B gradient)