

### Bunnett–Olsen equations

The equations for the relation between  $\lg([\text{SH}^+]/[\text{S}]) + H_0$  and  $H_0 + \lg [\text{H}^+]$  for base S in aqueous mineral acid solution, where  $H_0$  is Hammett's *acidity function* and  $H_0 + \lg [\text{H}^+]$  represents the activity function  $\lg (\gamma_{\text{S}}\gamma_{\text{H}^+})/\gamma_{\text{SH}^+}$  for the nitroaniline reference bases to build  $H_0$ .

$$\begin{aligned}\lg ([\text{SH}^+]/[\text{S}]) - \lg [\text{H}^+] &= (\Phi - 1)(H_0 + \lg [\text{H}^+]) + \text{p}K_{\text{SH}^+} \\ \lg ([\text{SH}^+]/[\text{S}]) + H_0 &= \Phi(H_0 + \lg [\text{H}^+]) + \text{p}K_{\text{SH}^+}\end{aligned}$$

See also *Cox–Yates equation*.  
1994, 66, 1091