**Electronic Supplementary Information**

# Solubility and solution thermodynamics of rhein in eight pure solvents from (288.15 to 313.15) K

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**Table S1 Sample table for rhein and solvents used in the experiment**

| Material | $E_T^N$ [a] | Molecular formula | Molar mass (g mol$^{-1}$) | Mass purity | Analysis method | Source |
|---|---|---|---|---|---|---|
| rhein | / | $C_{15}H_8O_6$ | 284.22 | 0.98 | HPLC | Shanghai Yuanye Bio-technology Co., Ltd |
| water | 1.000 | $H_2O$ | 18.02 | 1.000 | Conductivity< 1μS cm$^{-1}$ | Elga Purelab purification |
| glycol | 0.790 | $C_2H_6O_2$ | 62.07 | 0.995 | GC | Tianjin Kermel Chemical Reagent Co., Ltd |
| methanol | 0.762 | $CH_3OH$ | 32.04 | 0.995 | HPLC | Tedia Company, InC |
| ethanol | 0.654 | $C_2H_5OH$ | 46.06 | 0.990 | GC | Sinopharm Chemical Regent Co., Ltd |
| 1-propanol | 0.617 | $C_3H_7OH$ | 60.09 | 0.998 | GC | Jiangtian Chemical Technology Co., Ltd. |
| 1-butanol | 0.586 | $C_4H_9OH$ | 74.12 | 0.990 | GC | Tianjin Guangcheng Chemical Reagent Co., Ltd |
| 1,2-dichloroethane | 0.327 | $C_2H_4Cl_2$ | 98.96 | 0.990 | GC | Tianjin Kermel Chemical Reagent Co., Ltd |
| ethyl acetate | 0.228 | $C_4H_8O_2$ | 88.10 | 0.998 | GC | Tianjin Kermel Chemical Reagent Co., Ltd |

a $E_T^N = \frac{[E_T(30)(solvent) - 30.7]}{32.4}$; $E_T(30)[kcal\ mol^{-1}] = 28591/\lambda_{max[nm]}$. $E_T(30)$ scale were derived from negatively solvatochromic pyridinium N-phenolate betaine dyes.

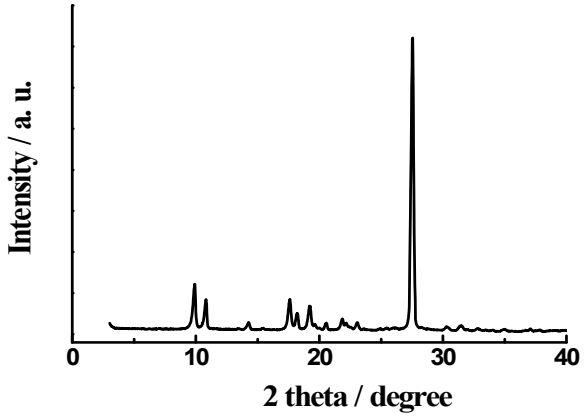


**Fig. S1** XRPD pattern of the obtained rhein powder.