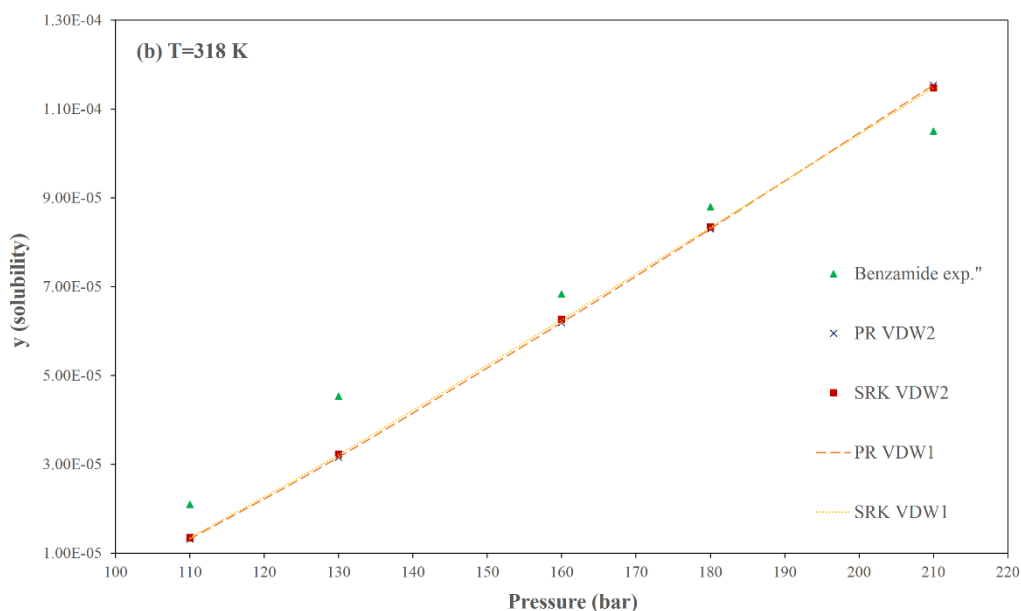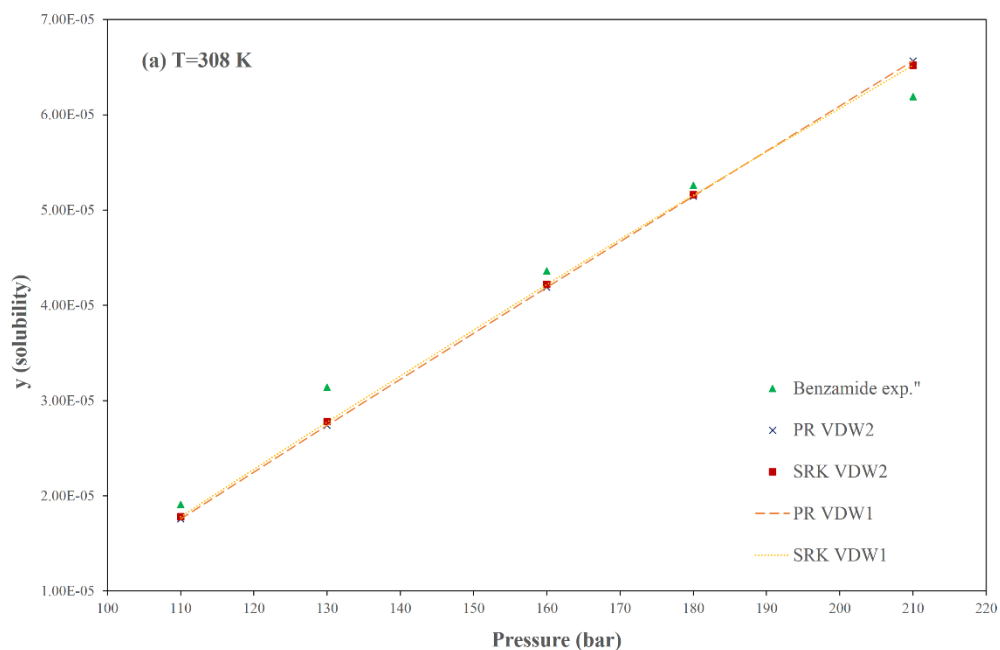1 **SUPPLEMENTARY MATERIAL**

2 All the data given in tables in the manuscript are shown as Figures for four drug compounds in

3 Figures 1-4. As the experimental data and calculated data from the proposed model are in good

4 agreement, we preferred to show the actual numeric data in the tables in the manuscript and

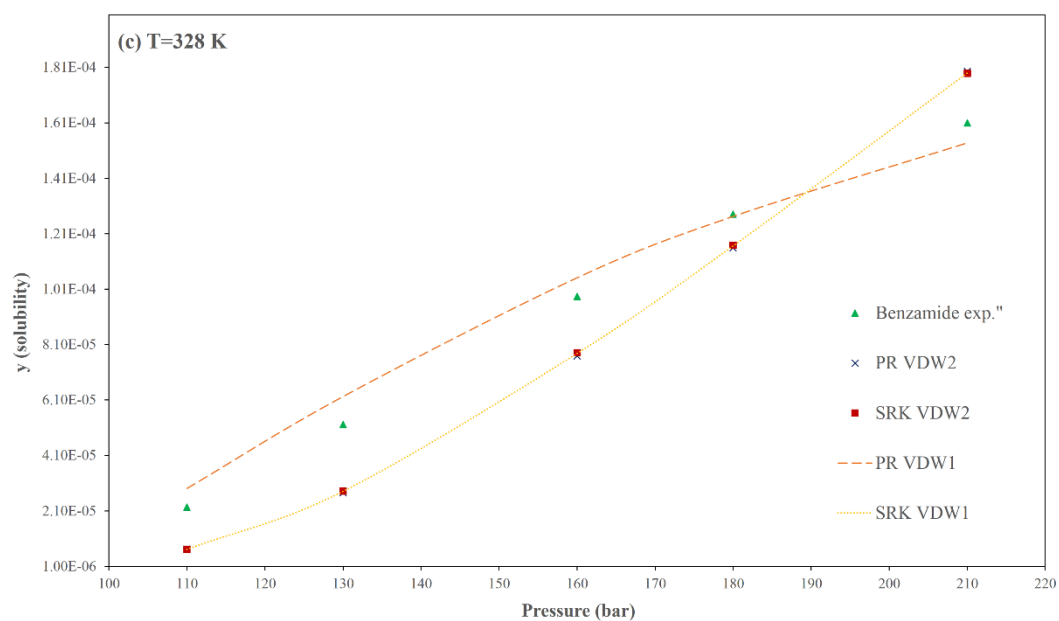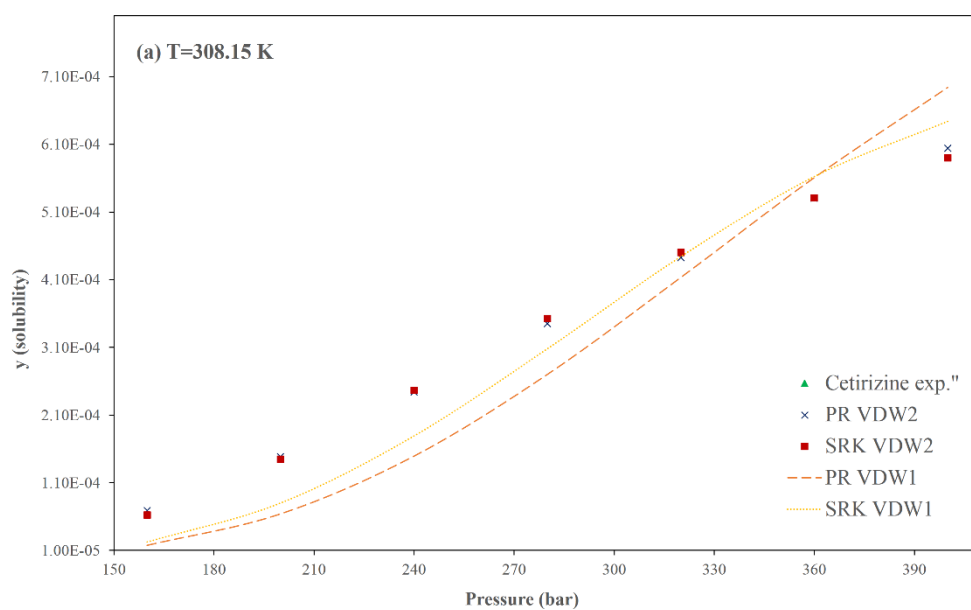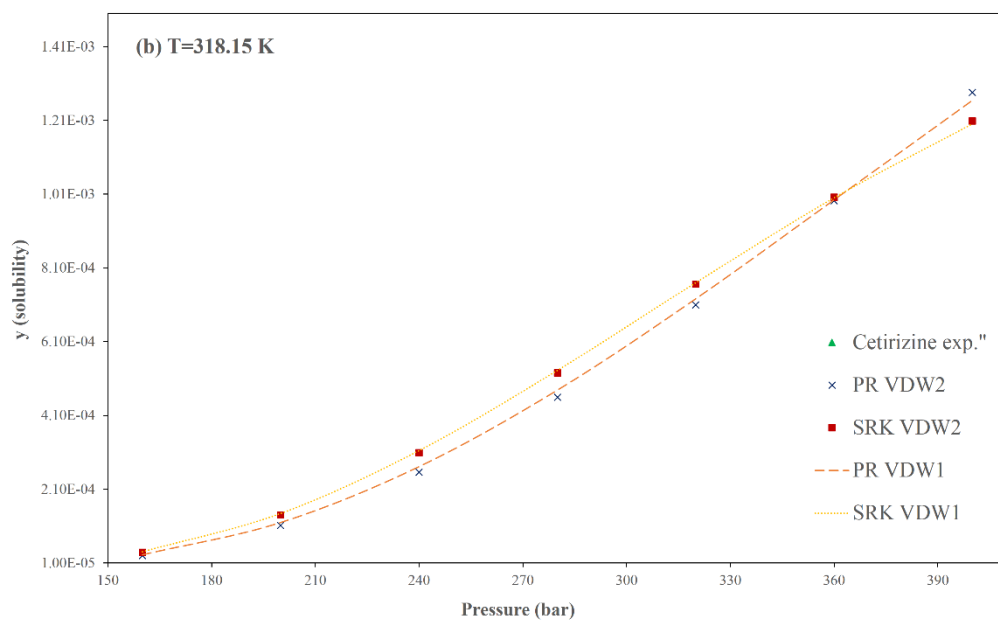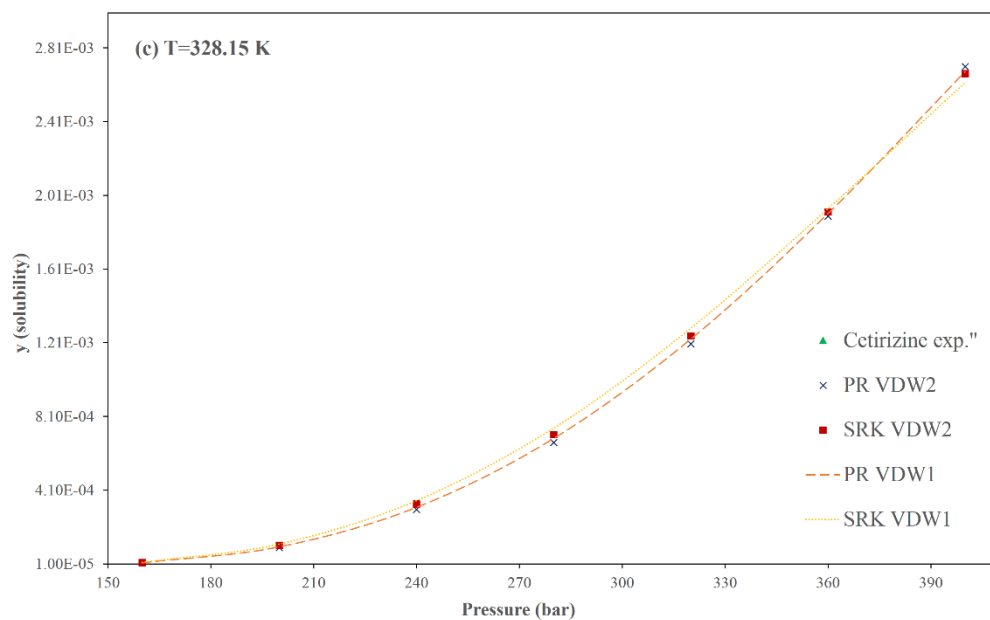5 supplementary data as figures are shown below.

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Fig 1. Experimental and modeling solubility data for Benzamide (a) T=308 K (b) T=318 K
(c) T=328 K

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(b) T=318.15 K
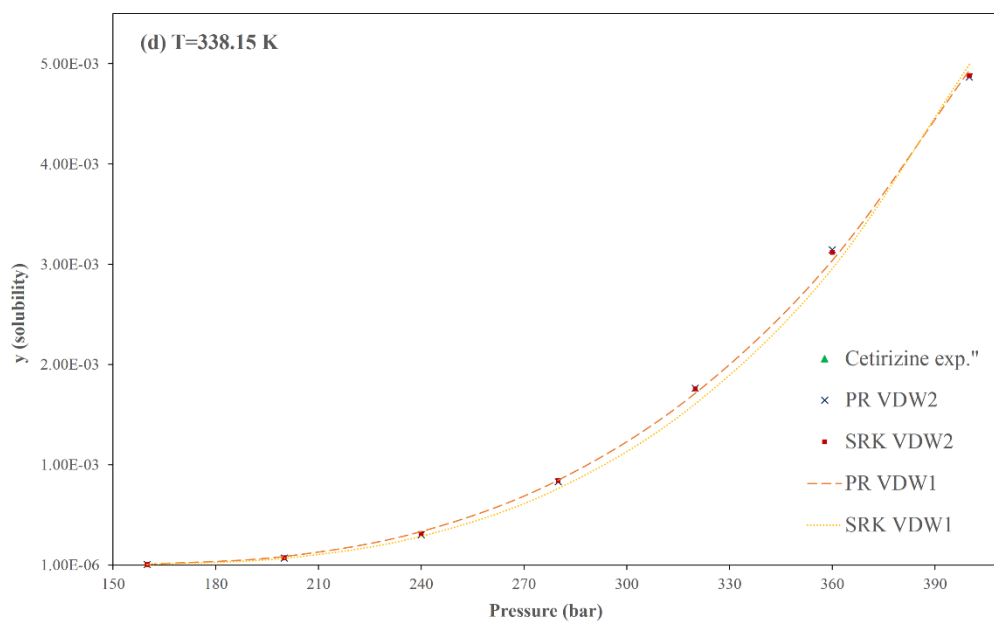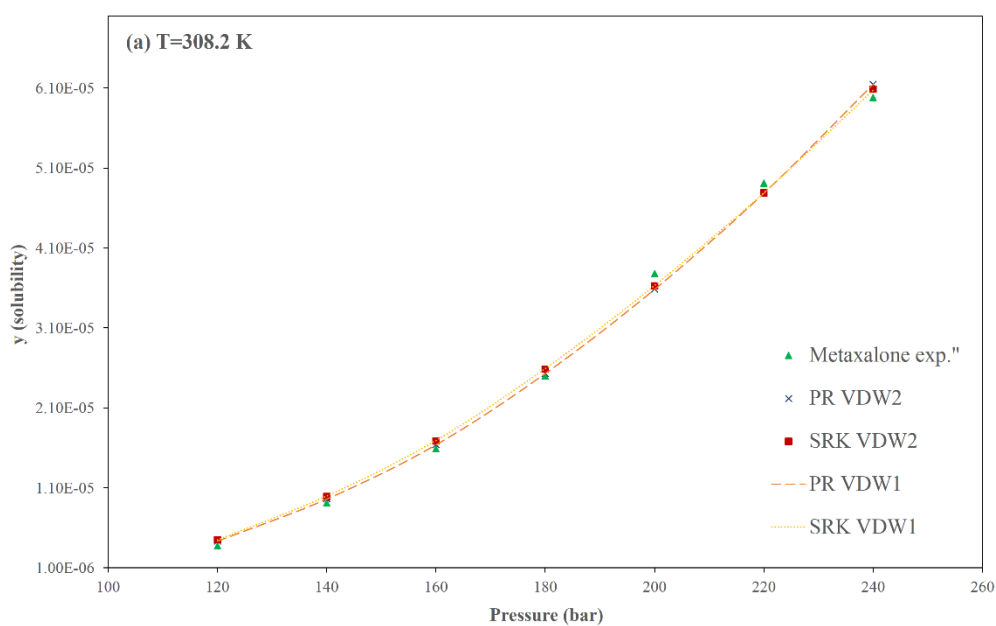
12

(c) T=328.15 K

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Fig 2. Experimental and modeling solubility data for Cetrizine (a) T=308.15 K
(b) T=318.15 K (c) T=328.15 K (d) T=338.15 K
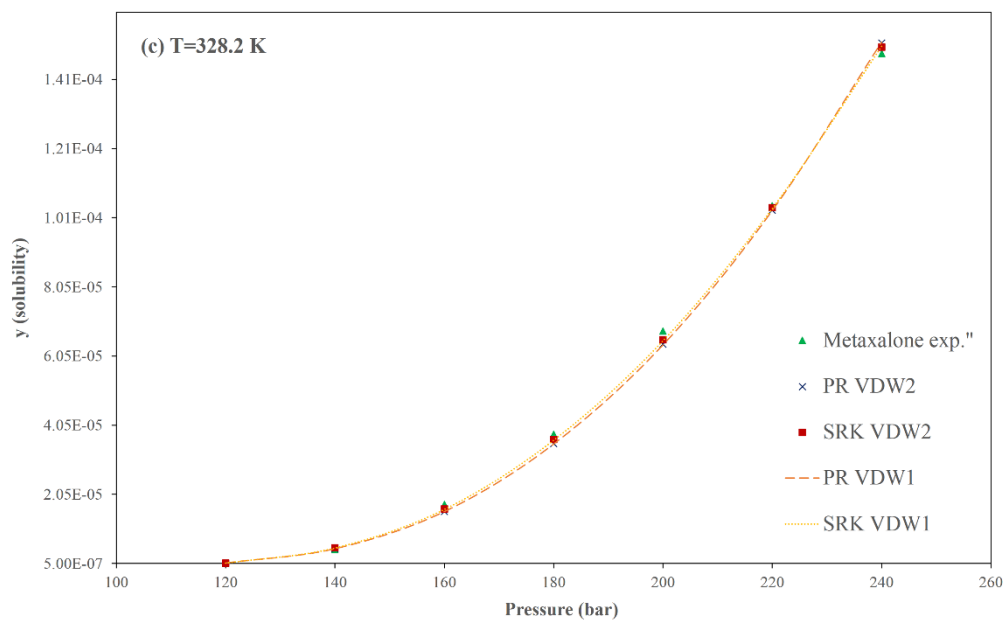

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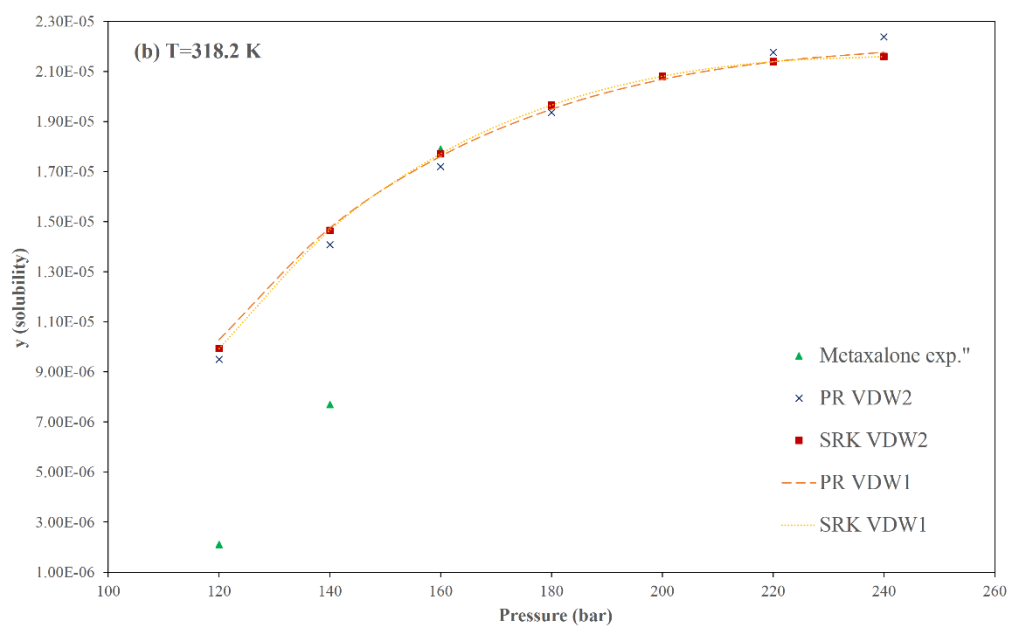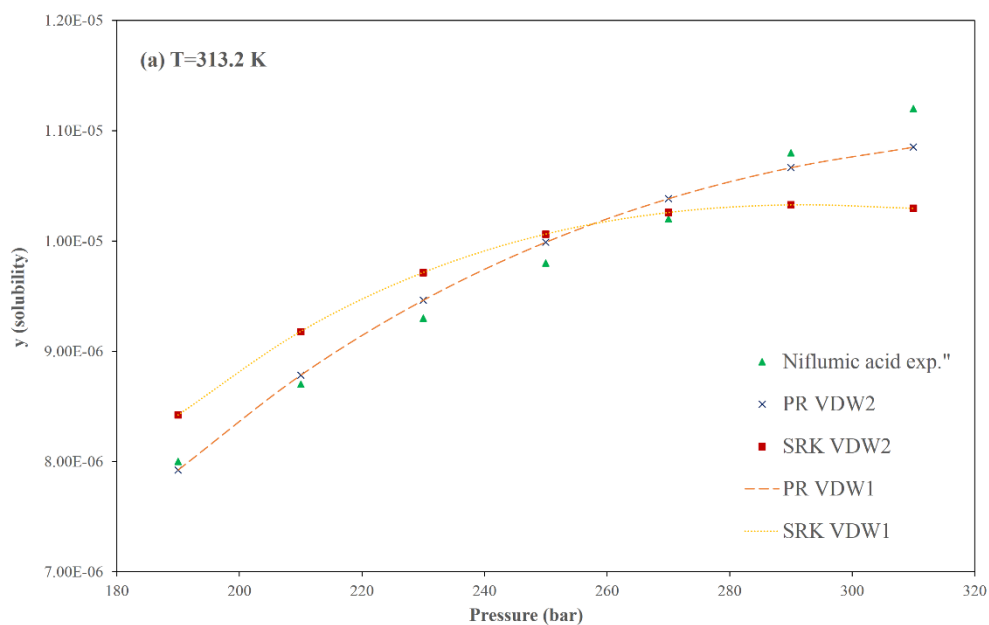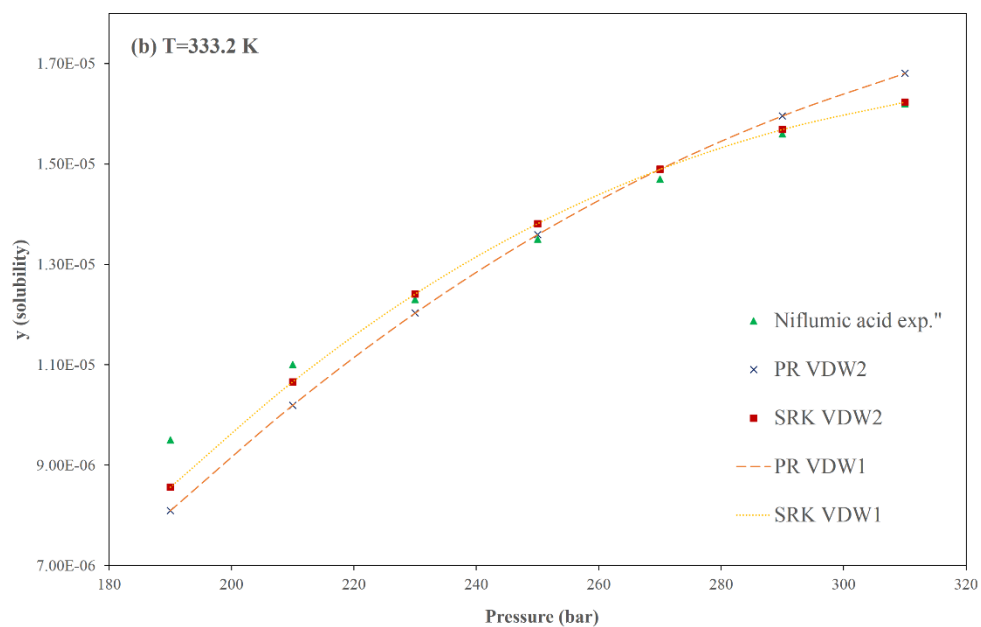20   Fig 3. Experimental and modeling solubility data for Metaxalone (a) T=308.2 K (b) T=318.2

21   K (c) T=328.2 K

(a) T=313.2 K

y (solubility) / Pressure (bar)

Legend:
- ▲ Niflumic acid exp."
- × PR VDW2
- ■ SRK VDW2
- - - PR VDW1
- ⋯ SRK VDW1

22

(b) T=333.2 K

y (solubility) / Pressure (bar)

Legend:
- ▲ Niflumic acid exp."
- × PR VDW2
- ■ SRK VDW2
- - - PR VDW1
- ⋯ SRK VDW1
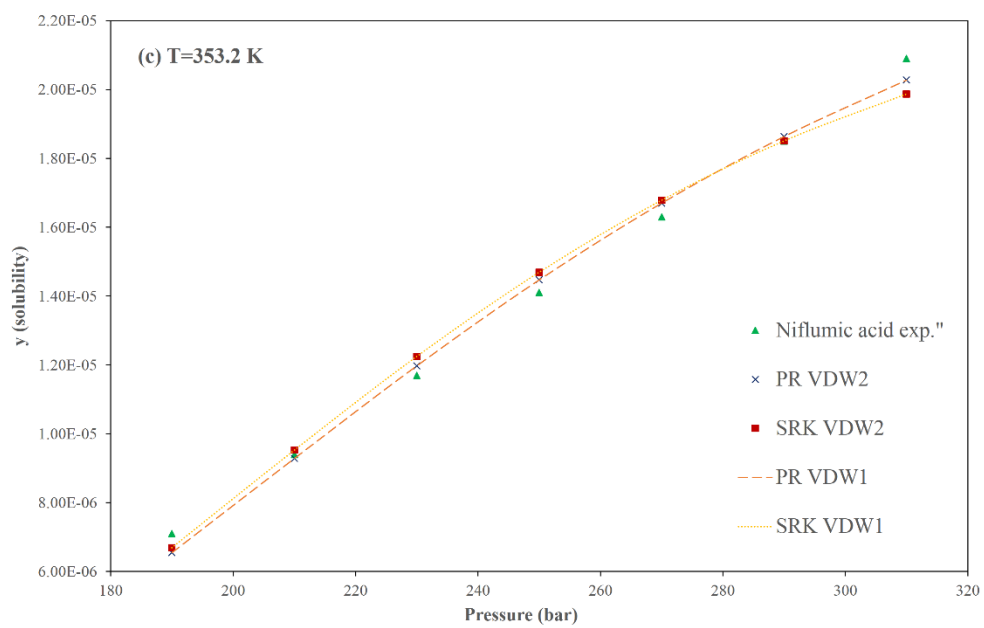
23

(c) T=353.2 K

24

Fig 4. Experimental and modeling solubility data for Niflumic Acid (a) T=313.2 K (b)
T=333.2 K (c) T=353.2 K