

# Reply to Comments by J.-N. Jaubert and S. Vitu on *J. Chem. Eng. Data* 2008, 53, 1321–1324

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Jaubert and Vita<sup>1</sup> recently made comments on our paper (Zhang et al.<sup>2</sup>). The main suggestion is that we should include some previous works on the solubility of CO<sub>2</sub> or N<sub>2</sub> in isooctane. There are many literatures reporting CO<sub>2</sub> + isooctane and N<sub>2</sub> + isooctane equilibrium data as summarized in Table 1.

**Table 1. Summary of Experimental Conditions for CO<sub>2</sub> or N<sub>2</sub> Solubility in Isooctane**

previous works on CO <sub>2</sub> or N <sub>2</sub> solubility	measurement conditions
Prausnitz and Benson <sup>3</sup>	(50 and 75) °C at (2 to 9) MPa for CO <sub>2</sub> in isooctane and N <sub>2</sub> in isooctane
Hiraoka and Hildebrand <sup>4</sup>	CO <sub>2</sub> in isooctane: 4.5 °C, 15 °C, 25 °C, 35 °C at 0.1 MPa of CO <sub>2</sub>
Han et al. <sup>5</sup>	CO <sub>2</sub> in isooctane: 30 °C, 45 °C, 60 °C, 73.2 °C up to 7 MPa of CO <sub>2</sub>
Mutelet et al. <sup>6</sup>	CO <sub>2</sub> in isooctane: (5 to 120) °C up to 11.1 MPa of CO <sub>2</sub>
Graham and Weale <sup>7</sup>	N <sub>2</sub> in isooctane: (50 to 180) °C, (2 to 63) MPa
Peter and Eicke <sup>8</sup>	N <sub>2</sub> in isooctane: (180 to 224) °C, (4.4 to 27.8) MPa

<sup>a</sup> The dissociation pressure of CO<sub>2</sub> hydrates at 5 °C is 2.28 MPa, predicted by CSMGem.<sup>9</sup>

However, all of the temperature and pressure ranges in the previous studies<sup>3–8</sup> are not corresponding to CO<sub>2</sub> hydrate and CO<sub>2</sub> + N<sub>2</sub> binary hydrate formation conditions except for a few data of the CO<sub>2</sub> solubility reported by Mutelet et al.<sup>6</sup> Then, our work first presented the equilibrium data of CO<sub>2</sub> + N<sub>2</sub> solubility in isooctane near the binary hydrate formation conditions. Thus, we would like to make a correction in the last sentence of the left column on page 1321: “At present, no reports can be found on the solubility of CO<sub>2</sub> and CO<sub>2</sub> + N<sub>2</sub> in isooctane *under their hydrate forming conditions except for some CO<sub>2</sub> data reported by Mutelet et al. (2005), which could be...*”

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**Table 2. Comparison of Two Studies on CO<sub>2</sub> Solubility in Isooctane**

Mutelet et al. <sup>6</sup>	Zhang et al. <sup>2</sup>
$x = 0.285$ at 1.65 MPa, 283.15 K	$x = 0.297$ at 1.75 MPa, 282.5 K
$x = 0.486$ at 2.70 MPa, 283.15 K	$x = 0.506$ at 2.77 MPa, 282.5 K
$x = 0.752$ at 3.70 MPa, 283.15 K	$x = 0.745$ at 3.64 MPa, 282.5 K

The CO<sub>2</sub> solubility data in Table 2 show overlaps between Mutelet et al.<sup>6</sup> and our work at some temperatures and pressures. Thus, our CO<sub>2</sub> solubility data are comparable to Mutelet et al.,<sup>6</sup> indicating our method for the solubility measurement is reliable.

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Received for review May 15, 2008. Accepted June 18, 2008.

JE8003518