

Erratum: “Toward the jamming threshold of sphere packings: Tanneled crystals” [J. Appl. Phys. 102, 093511 (2007)]

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The last vectors in Eqs. (7), (13), and (14) contain misprints. Specifically, the vector \mathbf{a}_3 in Eq. (7) should be

$$\mathbf{a}_3 = -\frac{\sqrt{3}}{6}\mathbf{i} + \frac{1}{2}\mathbf{j} + \sqrt{\frac{2}{3}}\mathbf{k}.$$

The vectors \mathbf{a}_3 and \mathbf{b}_2 in Eqs. (13) and (14), respectively, should be

$$\mathbf{a}_3 = \sqrt{\frac{8}{3}}\mathbf{k}, \quad \mathbf{b}_2 = -\frac{\sqrt{3}}{6}\mathbf{i} + \frac{1}{2}\mathbf{j} + \sqrt{\frac{2}{3}}\mathbf{k}.$$

It should be noted that the vectors contained in Eq. (14) that describe the basis particles in the simple tanneled hcp crystal is not the conventional crystallographic designation because it involves particles outside of the fundamental periodic cell, but our description is mathematically correct. A more conventional way of defining the basis vectors is as follows:

$$\mathbf{b}_0 = \mathbf{0}, \quad \mathbf{b}_1 = \mathbf{j}, \quad \mathbf{b}_2 = -\frac{\sqrt{3}}{6}\mathbf{i} + \frac{1}{2}\mathbf{j} + \sqrt{\frac{2}{3}}\mathbf{k}, \quad \mathbf{b}_3 = -\frac{\sqrt{3}}{6}\mathbf{i} - \frac{1}{2}\mathbf{j} + \sqrt{\frac{2}{3}}\mathbf{k}.$$

Note that the fundamental cell contains four particles.

Importantly, these misprints corrected here do not affect any of the main results or conclusions in our paper concerning the theta series or the jamming categories of the simple fcc and hcp tanneled crystals.

Although virtually all of the infinite number of tanneled crystal types identified in this paper (tanneled Barlow packings) contain chiral contacting neighbor arrangements, the simple fcc case with parallel tunnels is not one of them as incorrectly stated in the captions of Figs. 4 and 5, and in the text immediately before Fig. 4. Instead of constructing parallel tunnels of vacancies, one could have selected one of the other two remaining direction choices to construct either left-handed or right-handed spiral tunnels, in which the local seven-contacting structures are indeed chiral pairs, as shown in the replacement Fig. 4.

In the caption of Fig. 5, the edge lengths \overline{AD} , \overline{AE} , and \overline{DE} were given incorrectly. They should be $\overline{AD} = \sqrt{2}$, $\overline{AE} = \sqrt{6}/2$, and $\overline{DE} = \sqrt{6}/2$.

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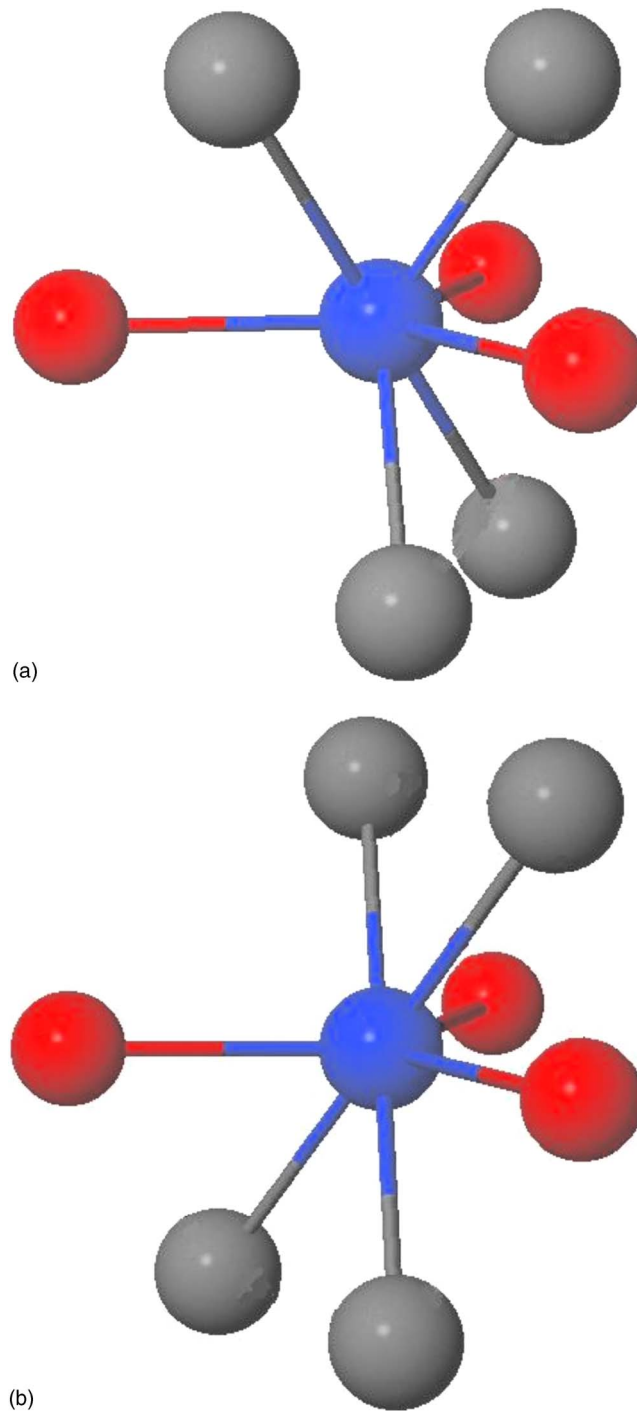


FIG. 4. (Color online) The chiral pairs of seven contacting neighbor arrangements in the “spiral” tunneled fcc packing. The orientation of the three red spheres that contact a central blue sphere within each honeycomb layer is the same in both chiral alternatives.