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Note

Comment of »Theory of the Formation of Colloidal Crystals« by Mirnik

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Recently Mirnik discussed colloidal crystals[1] on the basis of our experimental findings.[2] He claimed that the hexagonal structure of one particle surrounded by six others is in reality impossible and what we observed is a not true apparent hexagonal packing. His argument was based on a simple cubic lattice (See Figure 2 in Ref. 1.), which he incorrectly presumed to exist in colloidal dispersions. It should be pointed out that a simple cubic lattice structure has never been observed for colloidal systems. Our micrographic study ,[3] X-ray scattering[4] and Kossel line analyses[5] have established that the crystals belong to a face-centered-cubic (fcc) or body-centered cubic (bcc) symmetry, depending on the latex concentration. The (111) plane of an fcc structure provides a strictly hexagonal arrangement while the (110) plane of a bcc symmetry shows a slightly deformed hexagonal packing. Thus, his claim that $2D_{exp}$ is apparent interparticle distance is unwarranted, particularly for the fcc symmetry, it is actually the center-to-center distance between particles.

REFERENCES

1. M. Mirnik, *Croat. Chem. Acta* **66** (1993) 509.
2. N. Ise, H. Matsuoka, K. Ito, and H. Yoshida, *Faraday Discuss. Chem. Soc.* **90** (1990) 153.
3. See, for example, S. Dosho *et al. Langmuir* **9** (1993) 394.
4. T. Konishi, N. Ise, H. Matsuoka, H. Yamaoka, I. S. Sogami, and T. Yoshiyama, *Phys. Rev.* **B51** (1995) 3914.
5. See, for example, I. S. Sogami and T. Yoshiyama, *Phase Transitions* **21** (1990) 171. Earlier relevant literature is given in the article.