canSAS-VIII, Apr. 14-16, J-PARC, Tokai, Japan

# Learning about Reproducibility, Reliability and Limits of Data Interpretation from Round-Robin Studies

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Results from small-angle scattering experiments need to be compared and verified. It is important that both the data and their interpretation, derived from subsequent analysis are known to be reliable. One approach that proves useful is to compare measurements made on one sample with different instruments. No single sample is ideal for all comparisons, rather different challenges arise in the analysis of various different types of samples. Similarly, the comparison of analysis methods and software is useful. For example, a recent comparison of spherical particles identified that modeling of resolution and multiple scattering posed particular challenges [1]. Further, new measurements on the same samples with more X-ray instruments also indicate that resolution, background and detector calibrations need careful attention.

The choice of different samples for comparisons will be discussed. Suggestions for further inter-comparison of instruments will be made. These ideas will be related to other canSAS activities and the on-going efforts to provide ‘standards’ for published data.

[1] A. R. Rennie, M. S. Hellsing, K. Wood, E. P. Gilbert, L. Porcar, R. Schweins, C. D. Dewhurst, P. Lindner, R. K. Heenan, S. E. Rogers, P. D. Butler, J. R. Krzywon, R. E. Ghosh, A. J. Jackson and M. Malfois *J. Applied Cryst.*, **46**, 1289-1297, (2013).