モンテカルロ顕微鏡：提案と実証

Monte Carlo Microscopy: Proposal and Demonstration

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I have invented an unconventional method of scanning microscope based on statistics and stochastic process theory. The method mimics the human's behavior of finding unknown places in a large map and animal's hunting their prey from a large area.　In the method, starting points of searching are given by a given random distribution (the first layer), and the scanning starts to diffuse the search area based on a given stochastic process (the second layer).　The Diffusion area of scanning is limited by the entropy of local information of the sample. The method is effective to samples that scatter or emit extremely weak signals from a large scale and requires a fast image detection.　One of typical examples is Raman scattering microscopy.　Figure 1 shows a diagram of typical walk of laser beam on a sample based on the proposed method. In the presentation, I will show an experimental result of Raman scattering images in a limited exposure time with the proposed method and will discuss the effectiveness of the method in compared to the conventional scanning method of laser scanning microscope.

I would like to thank Dr. Shogo Kawano of Nanophoton Corporation for his experiments and valuable discussion.

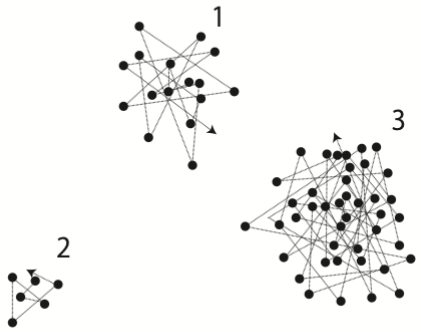

Fig. 1 Monte Carlo microscopy

References:

1. Patent pending.
2. 河田　聡、「科学計測のためのデータ処理入門」CQ 出版、2002