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Super-Resolution Imaging Using Randomly Diffusing Probes ANNA LABNO, HU CANG, CHRISTOPHER GLADDEN, XIANG ZHANG, University of California at Berkeley — Recent advances in super-resolution microscopy allow imaging of biological tissues labeled with fluorescent dyes with unprecedented resolution. These techniques often rely on the fact that single emitters can be localized with nm accuracy. When multiple emitters reside within a diffraction-limited spot they are serially photo-switched to ensure that they emit one at the time. This approach has not been applied to other imaging modalities, for example imaging local electromagnetic field enhancement, mainly because photo-switching would be infeasible. Here we present a super-resolution imaging technique which circumvents the requirement for serial photoswitching by using the random motion of single dye molecules to scan the surface in a stochastic manner. This technique allowed us to image electromagnetic field enhancement of a single spot formed on thin metallic film with 1.2nmn accuracy and gain insight into the mechanism for generating field enhancement.

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