Electronic Supplementary Material (ESI) for Analytical Methods

Supplementary material for the study entitled:

Resonant Waveguide Grating (RWG): Overcoming the Problem of Angular Sensitivity by Conical, Broad-band Illumination for Fluorescence Measurements

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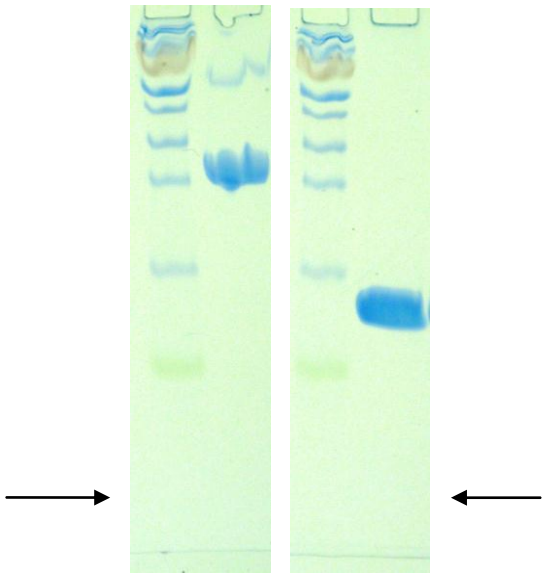
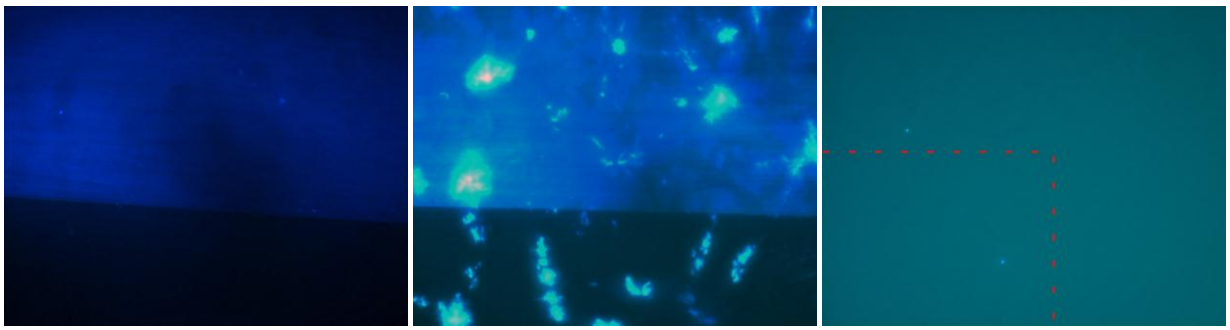


Supplementary FIG 1. On left, recombinant eGFP produced in *E. Coli* analyzed with (denaturing) SDS-PAGE (sodium dodecyl sulfate – poly-acrylamide gel electrophoresis) (14% acrylamide) and stained with coomassie blue brilliant (Bio-Rad, Hercules, CA). On right, chicken egg white lysozyme purchased from USB Corporation (Cleveland, OH). Total amount of protein loaded: 2.0 µg per well. Protein MW standards starting from bottom: 10 (yellow), 15, 25, 35, 40, 55, 70 (red), 100, 130 and 170 kDa. Arrows indicate approximate place of the dye front.



Supplementary FIG 2. To make sure whether the blue colour recorded in the study is due to aromatic residues within the lysozyme, we carried out several control experiments. On right, we have repeated the detection of lysozyme with the following modification: the lysozyme sample was thoroughly dialysed with molecular cut-off of 3500 Daltons. This was done to ensure the absence of any small molecular weight fluorescent contaminants. In the middle, we have applied alkaline 2% solution of amino acid tryptophan (Trp >98% Sigma, St. Louis, MO) on an UV-grating. Albeit crystallization of Trp has been occurred during the experiment, image shows that blue colour from Trp can be recorded in our set-up and it also implicate that the fluorescence can be enhanced (note smooth blue signal between crystals) . Image on right shows “buffer control” with longer exposure time. Grating cannot be seen in dark field (red dash line indicate corner of a grating), if no fluorescent material are applied to the surface. Neither employed buffers nor glass ware exhibit any such fluorescence that would be enhanced in our system. 40 x magnification, 1.57 s, 2.5 s and 5.0 s exposure times, from left to right respectively.