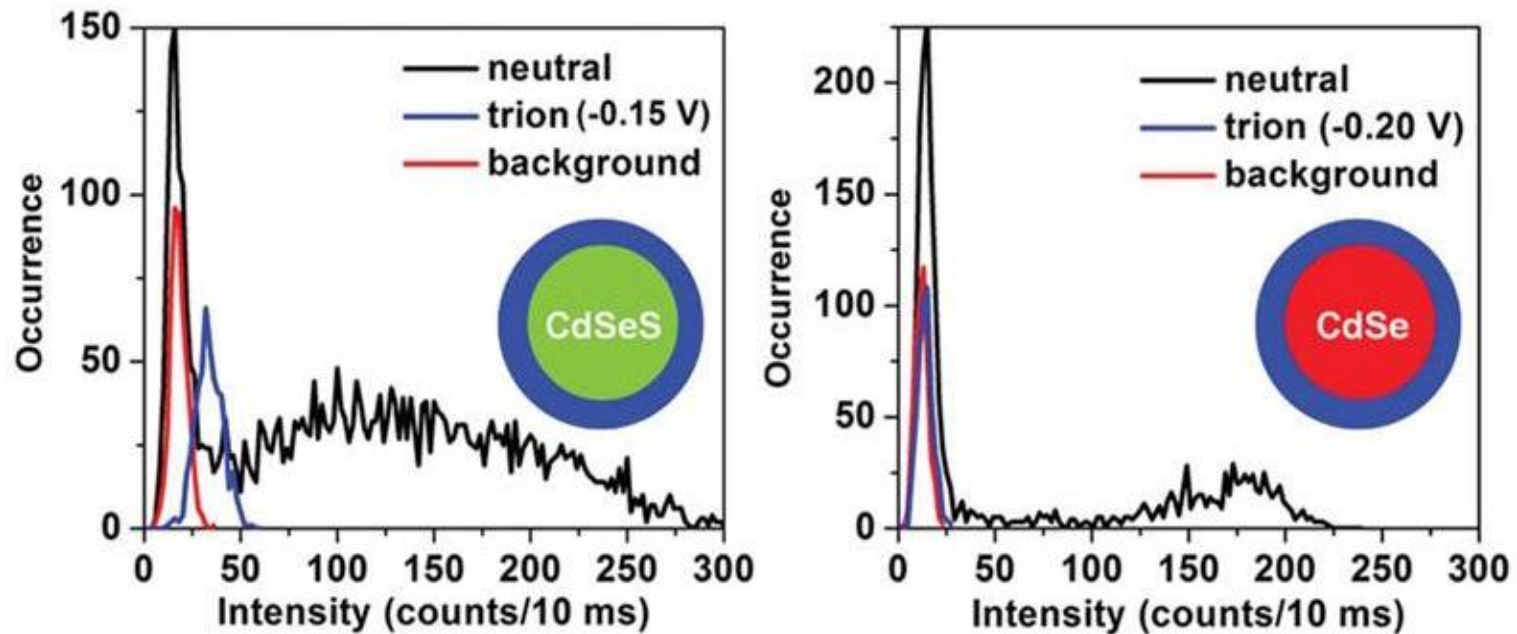


Electrochemistry, Surface Chemistry, and Luminescence of Single Fluorophores

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CdSe/ZnS core/shell colloidal semiconductor nanocrystals, first developed in 1995 by our group, are bright and stable fluorescent materials, widely used in many applications and even a single dot can be detected allowing for optical probes at nm spatial resolution. However, the CdSe/ZnS are dark when reduced. This is shown by the picture on the left, where the intensity drops to the background level in the reduced state (trion). This prevents using CdS/ZnS to report when reduction or oxidation conditions change. We investigate variations of the synthesized structures to make bright probes that can also be reduced. The picture on the right shows a successful variation where the reduced state is brighter than the background.