Here, we present a spectroscopic separation super resolution method based on the use of novel Germanium Quantum Dots (Qdots). To obtain images resolved below the Abbe diffraction limit we utilise spectral separation instead of temporal separation (as done in STORM/PALM\textsuperscript{1}) to achieve super resolution. This is done by registration of single Qdots in different spectral ranges\textsuperscript{2}. This principle is demonstrated using commercially available CdSe Qdots (Invitrogen) initially, following by demonstration on novel types of Ge Qdots. Our method requires random multi-size Qdots mixture in order to achieve super resolution and does not rely mono-disperse sample. Fluorescence images used to achieve super-resolution can be collected simultaneously giving high temporal resolution. Ge Qdots are ultra-small (around 3 nm) and with a good bio-compatibility, so that can potentially take the resolution limit down to a few nanometers.

To acquire data, a conventional single point laser scanning confocal microscope equipped with a spectral detector has been used. Since this approach results in an improved temporal resolution, we anticipate that it will be appropriate for live cell imaging using super-resolution methods.