produced exceptionally small structures, which were then dispersed in acetone. Under photoexcitation at 355 nm, blue fluorescence was observed. Using two-photon excitation with 780 nm light pulses of 150 fs duration, fluorescence correlation spectroscopy (FCS) was performed, which suggested a hydrodynamic radius of 0.9 nm (Akcakir et al., 2000). The same research group presented TEM images of graphite films coated with this colloidal solution. The images showed agglomerated particles of 1 nm in diameter, in very good agreement with the FCS work (Belomoin et al., 2000). IR spectra showed various Si-H bands of the freshly prepared samples: 520-750 cm^{-1} (SiH_2 scissors or SiH_3), 880-900 cm^{-1} (Si-H wagging) and 2070-2090 cm^{-1} (SiH stretch and coupled H-Si-Si-H). The 1070 cm^{-1} Si-O stretch was also observed. Treatment with H_2O_2 and subsequent IR spectroscopy was found to replace first the di- and trihydrogen bonds, and then the Si-H with Si-O. The coupled H-Si-Si-H bonds showed somewhat greater resilience. The blue fluorescence intensity changed by no more than a factor of two after H_2O_2 treatment (Belomoin et al., 2000).

Fluorescent silicon clusters produced by co-deposition with water vapour onto a cold target showed a similar sizes. Atomic force microscopy in non-contact and constant force mode of cluster films produced by drop-casting colloidal solution onto freshly cleaved HOPG showed uncovered regions of graphite, and agglomerated monolayers, as well as double layers, of clusters (Torricelli et al., 2011). The height of the monolayers reflected the difference of the tip-HOPG and tip-cluster forces, and hence cannot be taken as a measure of cluster height. However, measuring the differences between the tip-first cluster and tip-second cluster layers was expected to give a fair estimate of the height of the clusters in the film. Values between 0.92 and 1.62 nm were found (Galinis et al., 2012a), in very good agreement with Belomoin and co-workers (Belomoin et al., 2000).