This work provides insight into the morphology and mixing state of submicron particles in diesel exhaust from a ship engine with an exhaust gas recirculation scrubber. Particles from this low-speed ship engine on test bed were collected using a microiner-tial impactor with transmission electron microscopy (TEM) grids on two stages. Micro- and nanostructural characteristics of sin-gle particles were studied by TEM. Image analysis was carried out on overview and high-resolution images, revealing influence of the exhaust gas treatment (scrubber) on the particle morphology and mixing state. Soot agglomerates were found to be collapsed after scrubber, reflected by their change in fractal dimension (fly) from 1.88 to 2.13. Soot was predominantly found internally mixed with other components, with a higher degree of internal mixing observed after scrubber. Soot nanostructural characteristics on the near atomic scale such as layer distance, lamella length, and tortuosity were not observed to be influenced by the scrubber. We also found that particles in the size range between 30 and 50 nm, which were abundant in the exhaust before and after scrubber, were not graphitic soot. Furthermore, we found indications that these particles are composed of other crystalline material (salts).