Supporting Information

Figure S1 shows (a) the SE image, (b) BSE image and (c) the EDX spectrum of a particle of class 2. The relevant elements of particles of class 2 are nickel, manganese, cobalt and oxygen. By comparing the weight fraction of all particles of this class, it can be assumed that the chemical formula for these particles is approximately $(Ni_{0.45}Mn_{0.35}Co_{0.2})_3O_4$.

Figure S1. Analysis of a particle of class 2: a) SE image, b) BSE image, c) EDX spectrum.

Figure S2 shows (a) the SE image, (b) BSE image and (c) the EDX spectrum of a particle of class 3. As can be seen in the EDX spectrum, the particle mainly consists of manganese and oxygen. For the particle of this class the chemical formula Mn_2O_3 (weight fraction of 69.6 wt% Mn and 30.4 wt% O) can be estimated.

Figure S2. Analysis of a particle of class 3: a) SE image, b) BSE image, c) EDX spectrum.

In Figure S3 (a) the SE image, (b) BSE image and (c) EDX Spectrum of a particle of class 4 is shown. Particles of this class consist mainly of carbon.

Figure S3. Analysis of a particle of class 4: a) SE image, b) BSE image, c) EDX spectrum.

Figure S4 shows (a) the SE image and (b) BSE image of an agglomerate of different classes. This kind of particle is classified to class 5. In the BSE image it can be seen, that different kinds of particles stick on a main particle. The main particle belongs to class 1 (see Figure S4(c)), whereas the particles on the main particle belong to class 2 (see Figure S4(d)).

Figure S4 Analysis of a particle of class 5: a) SE image, b) BSE image, c) EDX spectrum of area marked Class 1, d) EDX spectrum of area mark Class 2.