Colloids for Catalysts: A concept for the preparation of superior catalysts of industrial relevance

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Compared to conventional preparation methods for supported heterogeneous catalysts, the use of colloidal nanoparticles (NPs) allows for a precise control over size, size distribution, and distribution/location of the NPs on the support. However, common colloidal syntheses have restrictions that limit their applicability for industrial catalyst preparation. We developed a simple, surfactant-free and scalable preparation method for colloidal NPs – dubbed "Co4Cat Colloids for Catalysts" - to overcome these restrictions. In our work we demonstrate how precious metal NPs are prepared in alkaline methanol, how individual properties like particle composition, size, loading, but also particle distribution and location on the support can be tuned and how optimized supported catalysts are obtained. The potential of these colloids to prepare improved catalysts has been demonstrated in academic research [1], but also at industrial (kg)
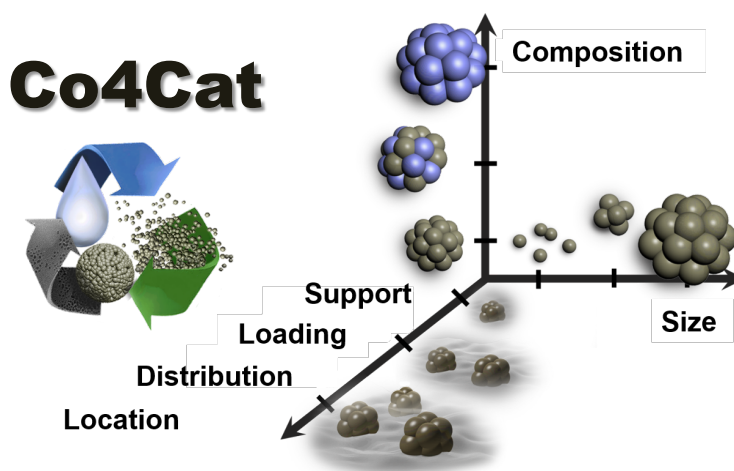
scale and a patent application has been filed [2]. Currently we are looking for further partners that are interested in our technology.

[1] Quinson, J.; Neumann, S.; Wannmacher, T.; Kacenauskaite, L.; Inaba, M.; Bucher, J.; Bizzotto, F.; Simonsen, S.; Theil Kuhn, l.; Bujak, D.; Zana, A.; Arenz, M.; Kunz, S. *Angew. Chem.* **2018**, doi.org/10.1002/ange.201807450.
[2] Kunz S., Quinson, J., Arenz, M. EP 3 329 990 A1, WO 2018/099958 A1