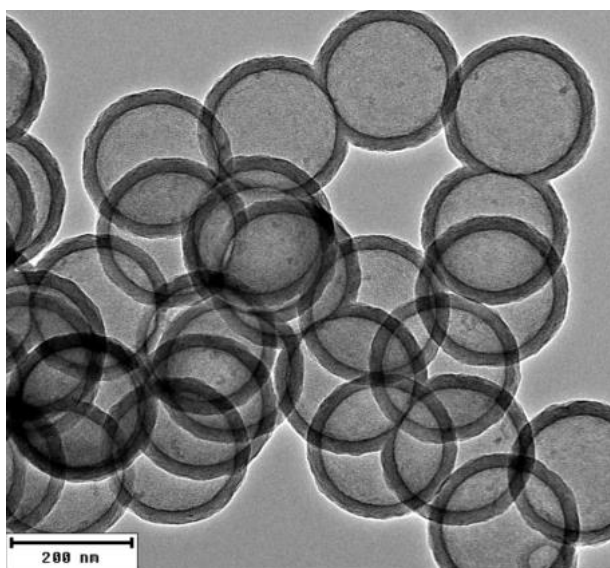


Strategies to Porous Carbons via Templating and Carbon Spherogel Monoliths as a Novel Platform Approach

Michael S. Elsaesser^a

^a*Chemistry and Physics of Materials, Paris Lodron University of Salzburg, Austria*

Templating represents a very versatile route to porous carbons. One class of these are carbon aerogels - open porous solids with surface areas up to 2500 m²/g. Offering also electrical conductivity, these materials are also highly promising for applications such as energy storage (electrodes for supercapacitors), capacitive desalination, catalysis or adsorption. We have developed a facile templating strategy to tailor the morphology and pore structure, namely monolithic carbon spherogels, solely composed out of hollow carbon spheres [1]. One can imagine, the sphere interior space serves as very attractive place for guest species offering accessibility by the microporous carbon shell as well as an electrically conductive carbon scaffold. Such a hybrid variant, featuring an extraordinary homogeneous encapsulation of titania e.g. showed the high potential of our resorcinol-formaldehyde based sol-gel route by adding various metalorganic precursors [2]. The turnover to sustainable precursor chemicals such as tannin and 5-HMF was recently reported [3] and optional application examples are presented.



TEM image of a Carbon Spherogel sample with 200 nm diameter size

-
- [1] M. Salihovic, G. Zickler, G. Popovski, M. Ulbricht, O. Paris, N. Huesing, V. Presser, and M. S. Elsaesser *Carbon*, 2019, 153, 189-195.
- [2] M. Salihovic, J. Schoiber, A. Cherevan, C. Rameshan, G. Fritz-Popovski, M. Ulbricht, S. Arnold, V. Presser, O. Paris, M. Musso, N. Huesing, and M. S. Elsaesser *Chem. Commun.*, 2021, 57, 3905-3908.
- [3] A.-K. Koopmann, J. Torres-Rodriguez, M. Salihovic, J. Schoiber, M. Musso, G. Fritz-Popovski, N. Huesing and M. S. Elsaesser *ACS Appl. Nano Mater.*, 2021, 4, 14115-14125.