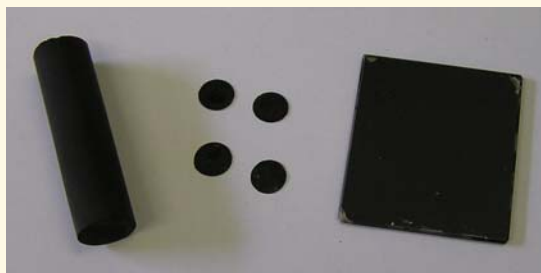
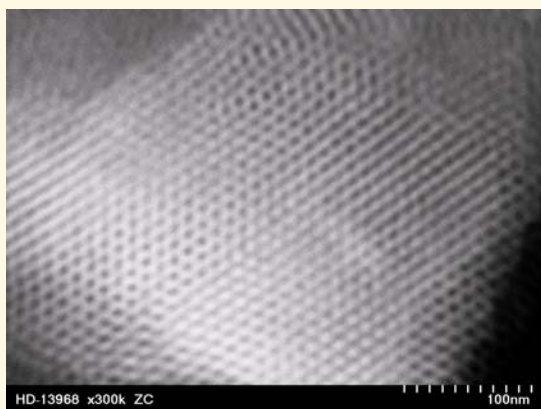


Mega-Pore Nano-Structured Carbon

New Materials for Chromatography and Separation

Mega Pore Nano-Structured Carbon



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Summary

Monolithic structures are an excellent solution for fast separations. However, due to the chemical nature of the two leading materials, silica and polymer, used for separation applications are limited to certain solvents and pH ranges.

Scientists at ORNL have developed a new type of separation material made from nanostructured carbon. The robust carbon monolith has hierarchical porosity characterized by macropores and mesopores. The macropores have a size in the range of 0.05 microns to 100 microns and the mesopores have a range from 18 Angstroms to 50 nanometers. This new material is not only price competitive with existing materials but also enables new types of chromatography and separation.

Advantages

The performance advantages over existing technologies

		Ability to functionalize	pH stability (doesn't dissolve)	Solvent stability (doesn't swell)	Withstands high temp (enables HTHPLC)	Conductive (enables EMLC)	Robust (not fragile)	Suitable for size-exclusion chromatography	Higher flow rates (works faster)
Packed	Silica	✓	✗	✓	✓	✗	✓	✗	
	Polymer	✓	✓	✗	✗	✗	✓	✗	
	Carbon	✗	✓	✓	✓	✗	✓	✗	
Monolith	Silica	✓	✗	✓	✓	✗	✗	✓	✓
	Polymer	✓	✓	✗	✗	✗	✓	✓	✓
	Carbon	✓✓	✓	✓	✓	✓	✓	✓	✓✓

Patents

- Robust carbon monolith having hierarchical porosity, (UTB – ID 1297) [US Patent 7,449,165](#)
- Highly ordered porous carbon materials having well defined nanostructures and method of synthesis, (UTB – ID 1410) [US Patent Application Number 10/938,895](#)



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