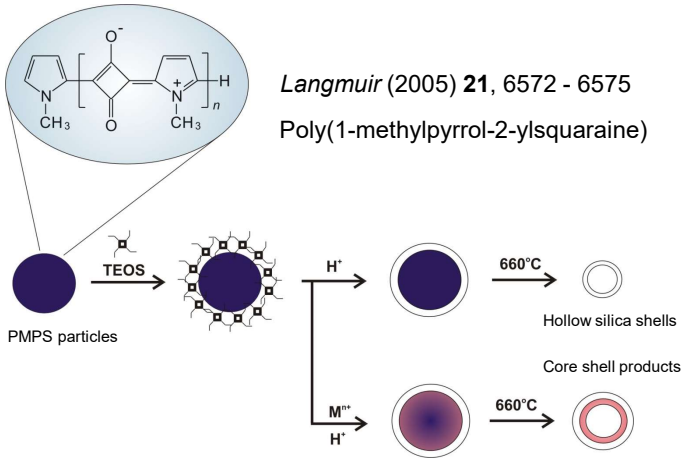
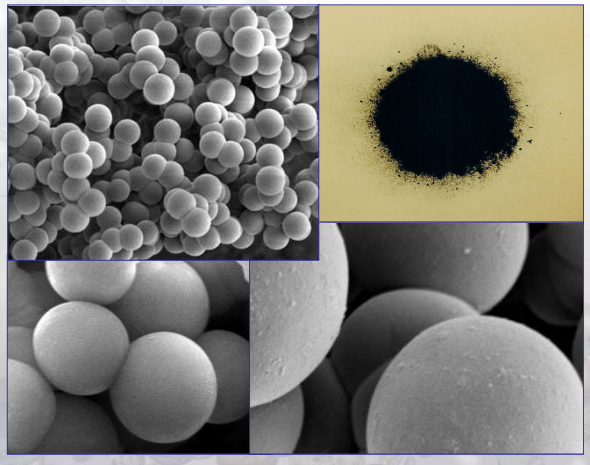
Production methodology



Langmuir (2005) **21**, 6572 - 6575

Poly(1-methylpyrrol-2-ylsquaraine)

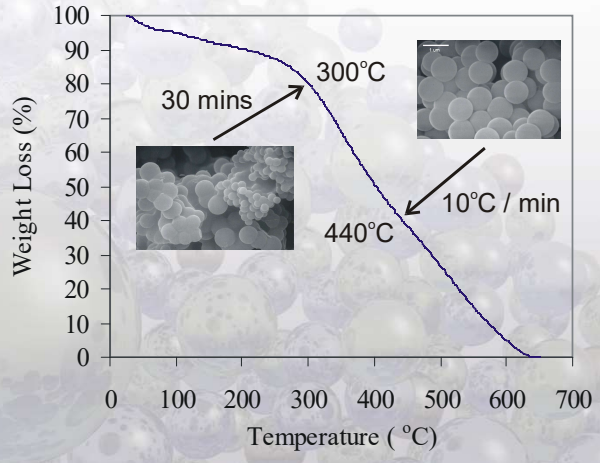
PMPS particles



PMPS particle parameters

- particle size: 1.3 – 2 µm diameter
- few beads with diameters up to 4 µm
- thermally stable up to 280ºC
- mean nominal stress at rupture: 493 ±113 MPa
- mean deformation at rupture: + 65% initial diameter
- polymer additives / functional fillers
- storage and slow release
- separation / filtration media

TGA data



Absorbent sponges

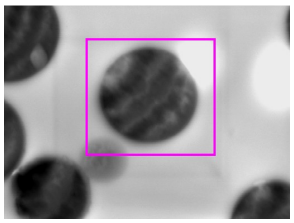
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Uun	Uuu	Uub		Uuq		Uuh		Uuo

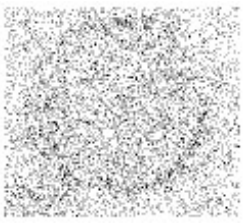
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Plastics additives

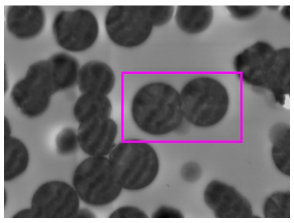
Porosity

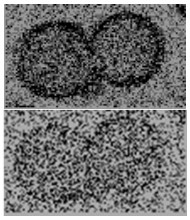
Porosity





Uranium

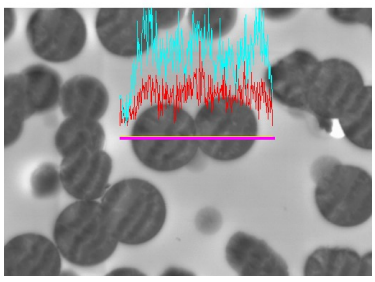




Chlorine

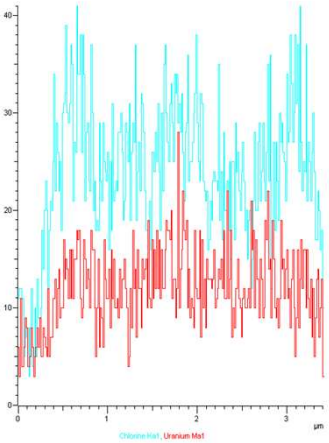
Uranium

Porosity

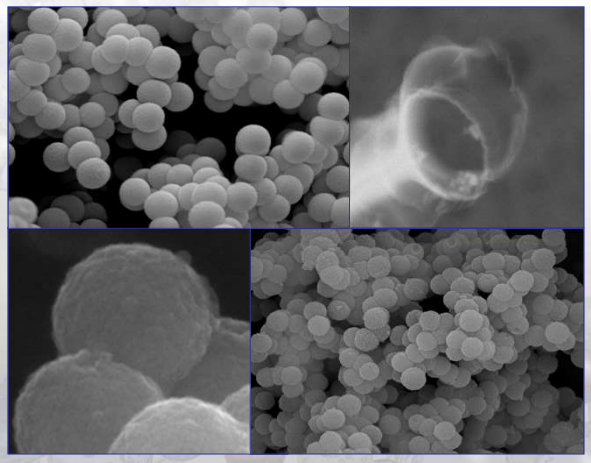


Chlorine – light blue

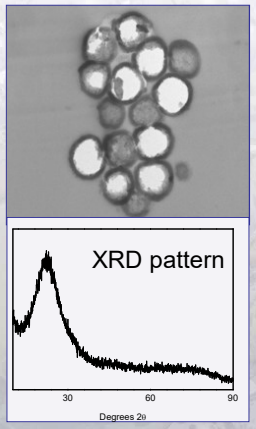
Uranium - red



Hollow silica shells

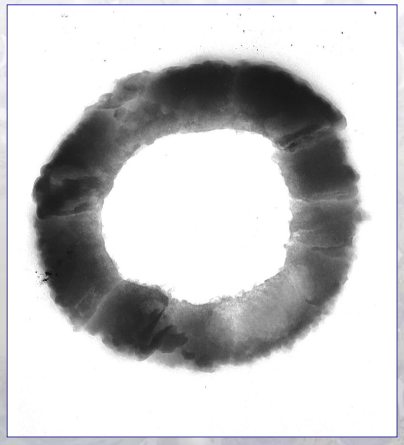


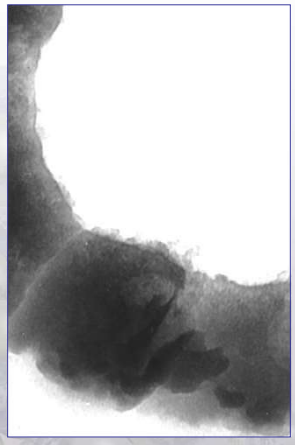
Silica shell parameters



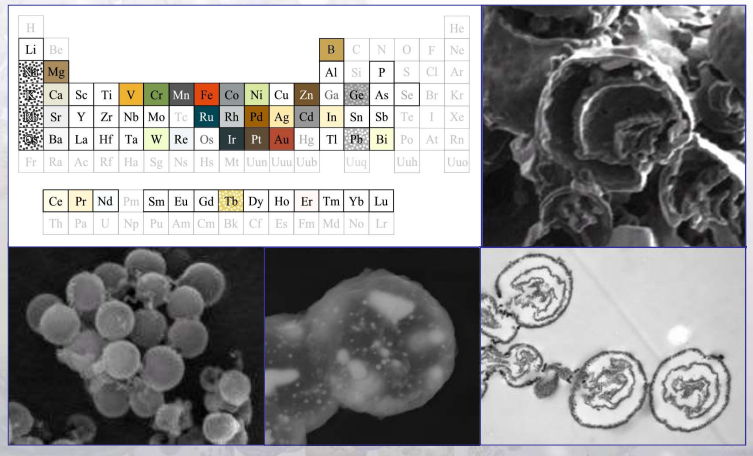
- particle size:
  650 nm – 1.0 µm diameter
- wall thickness ≥10% diameter
- aggregated
- mean nominal stress at rupture:
  438 ±47 MPa
- mean deformation at rupture:
  + 53% initial diameter
- BET SSA > 370 m^2/g

Silica shell parameters





Encapsulated metals - $M^{n+}@SiO_2$



Encapsulated dyes and pigments

Organic dyes@SiO_2 YVO_4-$Eu_{2\%}$@SiO_2

Principal applications

- Storage and controlled release media
- Slow release media
- Encapsulated optical media (i.e. dyes, pigments etc.)
- Encapsulated fragrances and flavours
- Encapsulated UV absorbents
- Polymer additives / Functional fillers
- Biological / catalysis support media
- Separation / filtration media