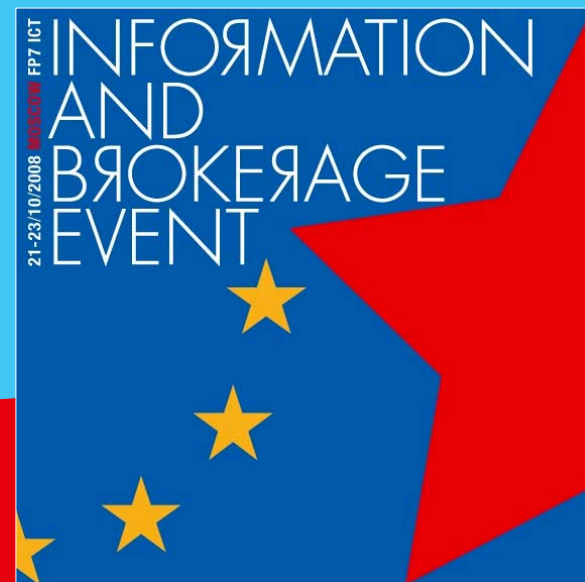


Project Presentations

Quest for Novel Aromatic Systems

Irena G. Stará

IOCB Prague
Academy of Sciences
Czech Republic
stara@uochb.cas.cz



21-23/10/2008 MOSCOW • FP7 ICT

Agenda / content

- > **Aromatics for Molecular Electronics**
- > **Helically Chiral Aromatics**
- > **Azahelicenes**
- > **Extended Helicenes**
- > **Quest for Large Aromatic Systems**

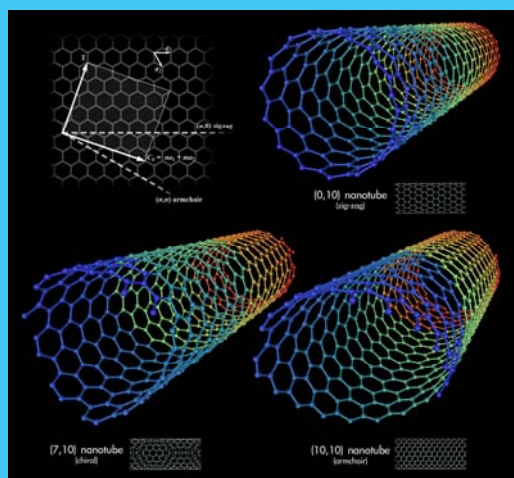
21-23/10/2008 MOSCOW • FP7 ICT



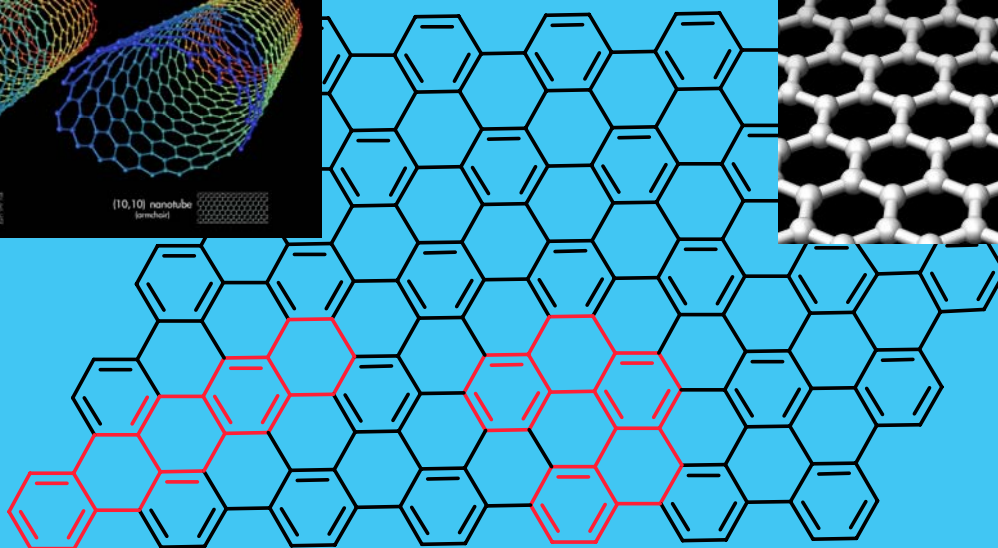
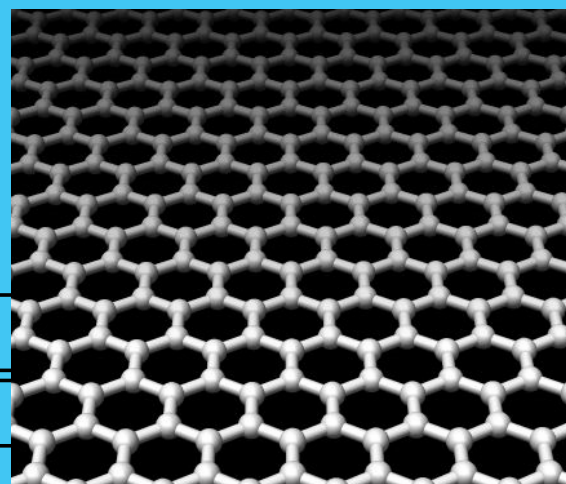
Aromatics for Molecular Electronics

> Aromatic Systems: Key for Future Molecular Electronics?

Carbon Nanotubes



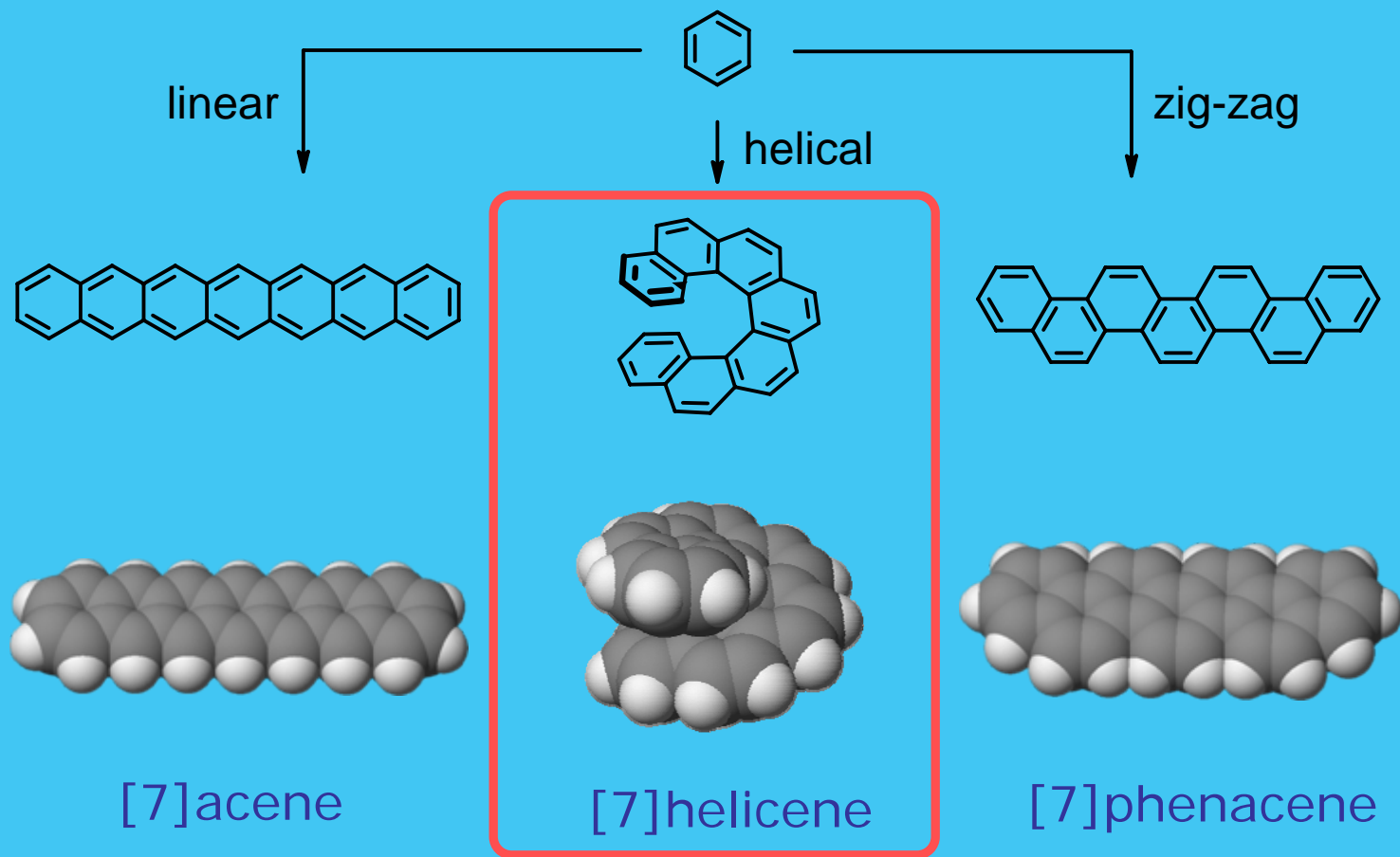
Graphene



21-23/10/2008 MOSCOW • FP7 ICT



Helically Chiral Aromatics



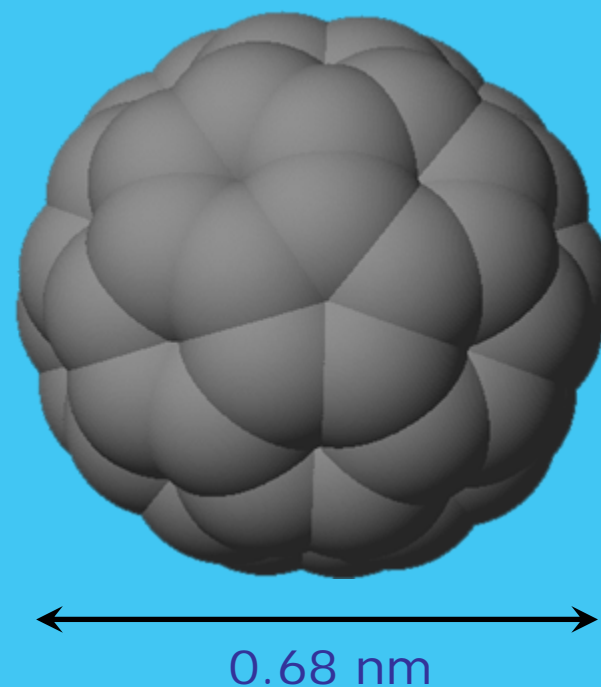
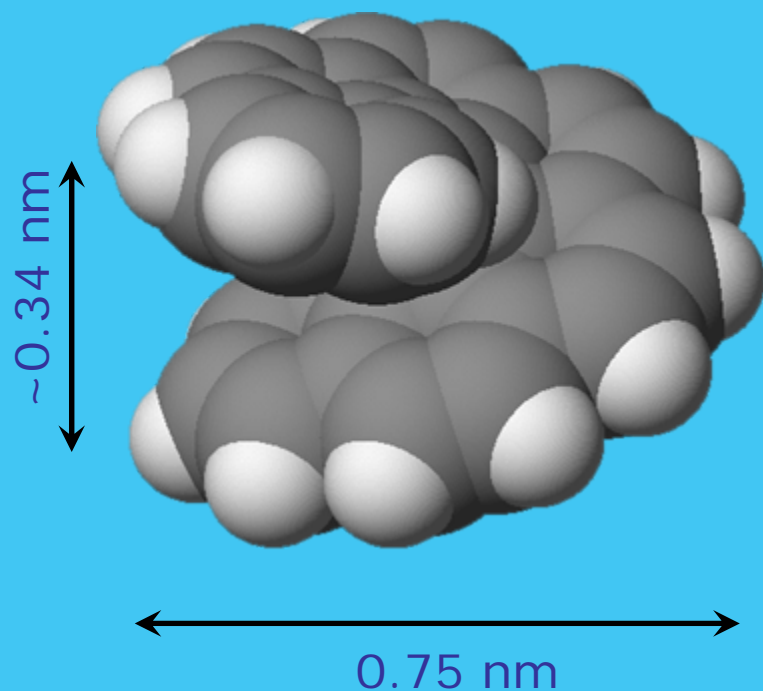
21-23/10/2008 MOSCOW • FP7 ICT



Size of Helicenes

[7]helicene

buckyball C_{60}

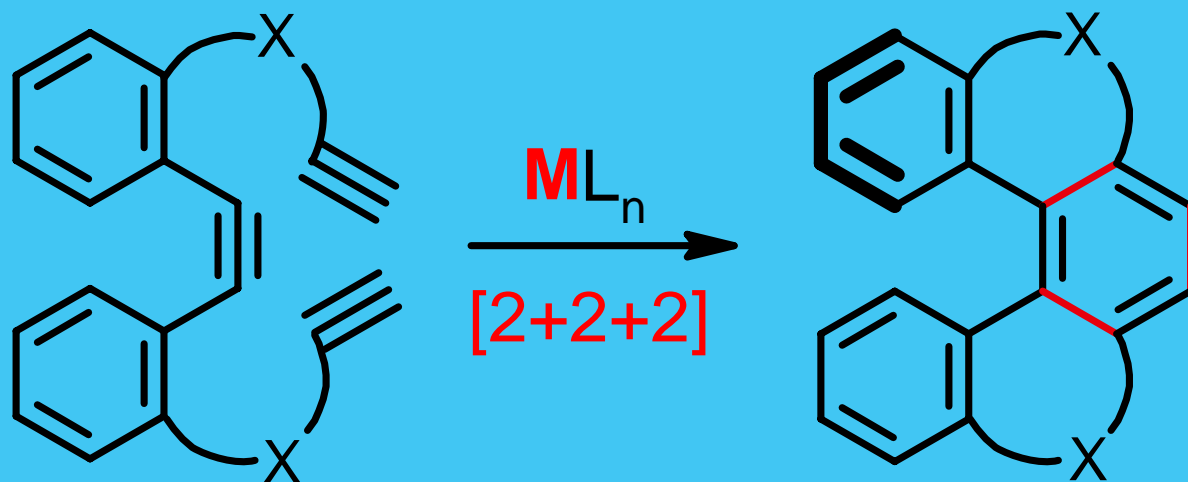


21-23/10/2008 MOSCOW • FP7 ICT



Our Approach - General Methodology

[2+2+2] Cyclotrimerisation

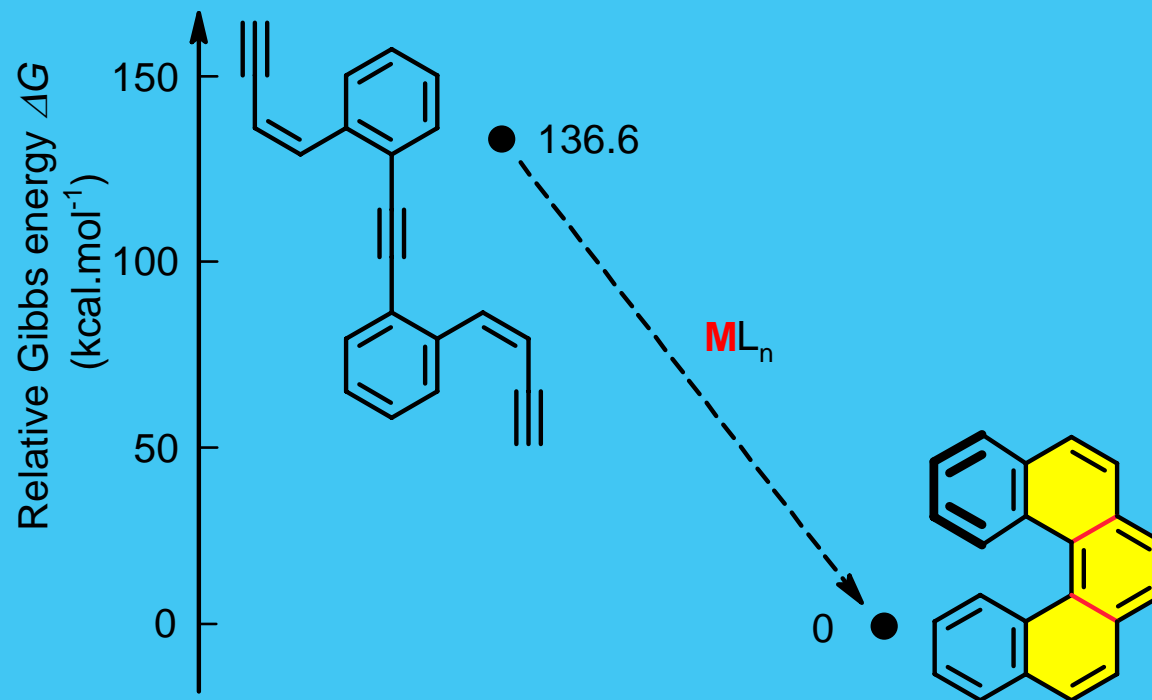


OL **2005**, 13, 2547
JOC **2003**, 68, 5193
JACS **2002**, 124, 9175

21-23/10/2008 MOSCOW • FP7 ICT



Direct Synthesis of Helicenes



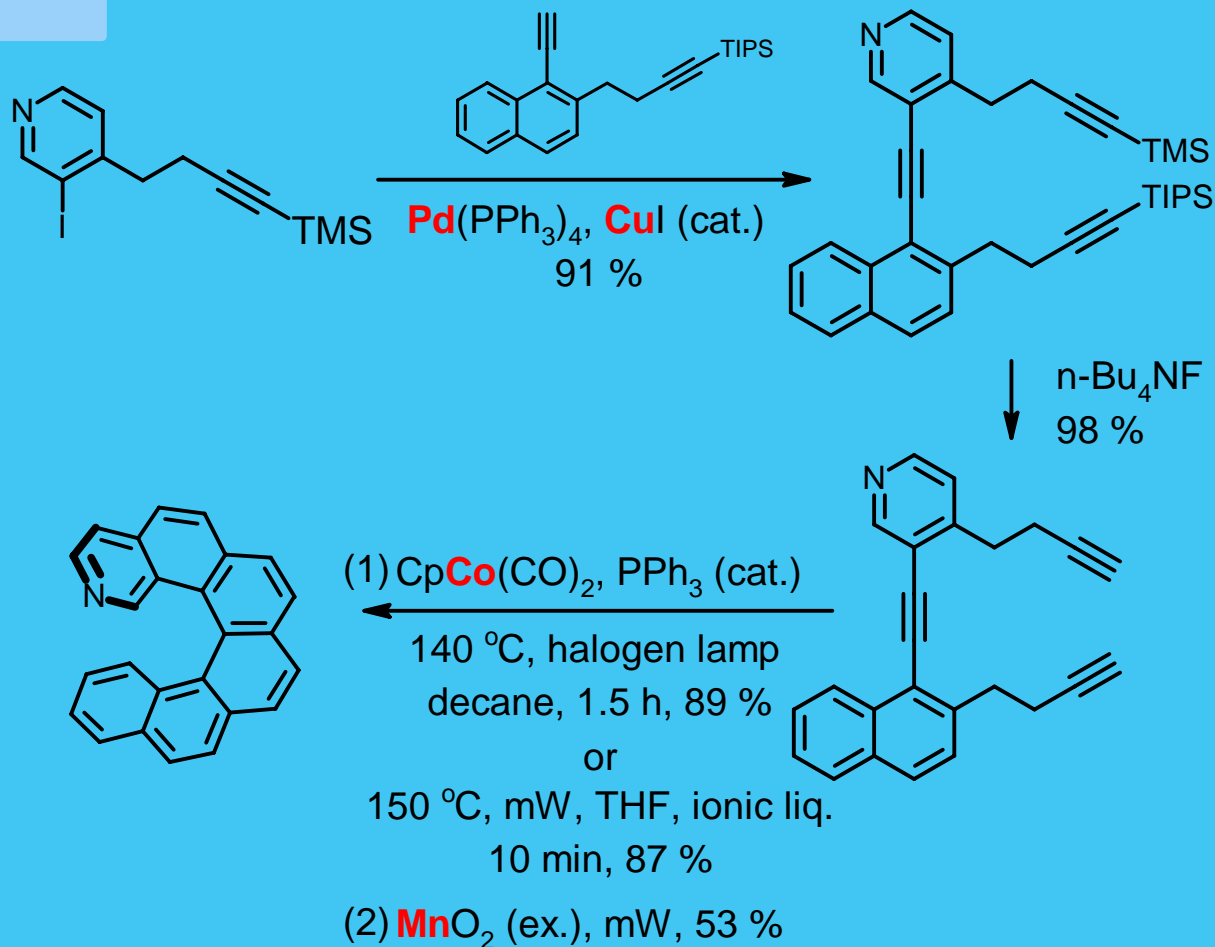
JACS 2002, 124, 9175

21-23/10/2008 MOSCOW • FP7 ICT



Azahelicenes

2-aza[6]

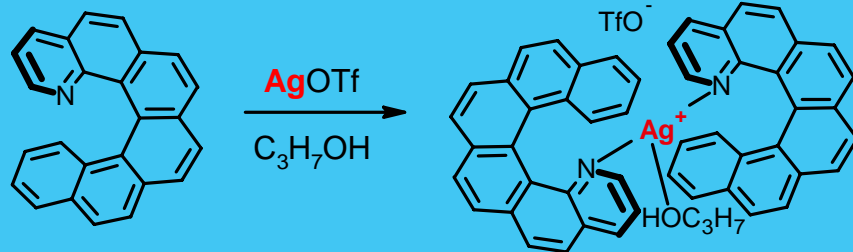


ACIE 2008, 47, 3188

21-23/10/2008 MOSCOW • FP7 ICT



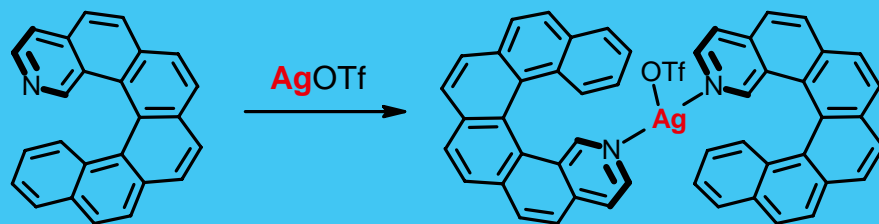
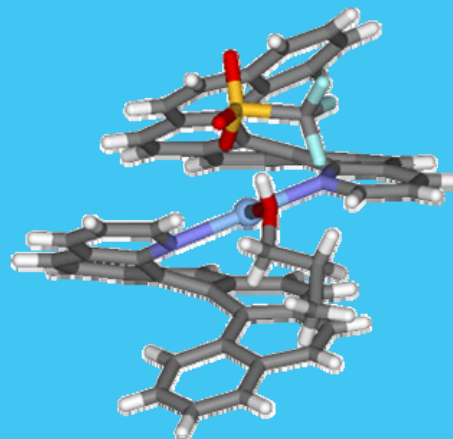
Silver(I) Complexes of Azahelicenes



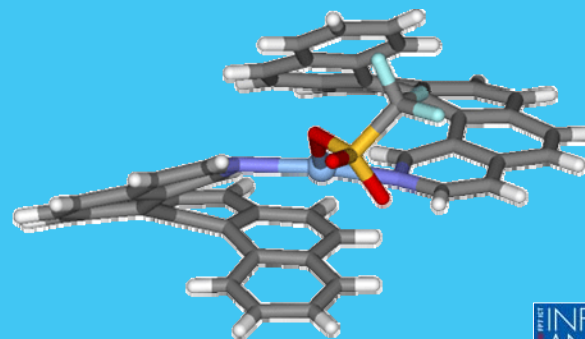
1-aza[6]

racemic

(*M,M*) and (*P,P*) pairs in the crystal



2-aza[6]

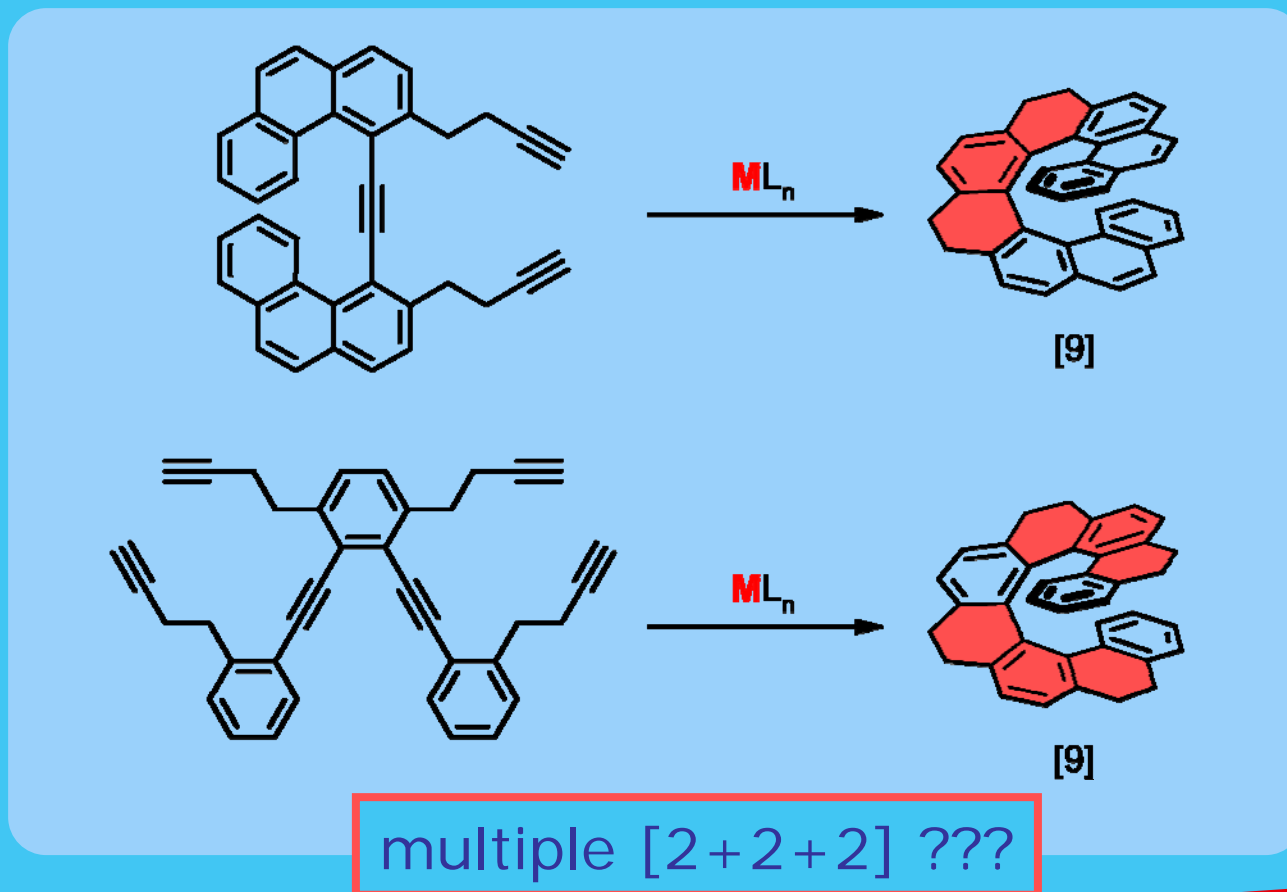


21-23/10/2008 MOSCOW • FP7 ICT

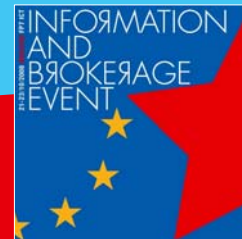


Extended Helicenes

Proposed strategy:

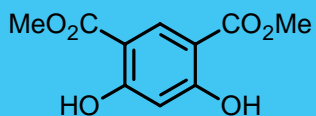


21-23/10/2008 MOSCOW • FP7 ICT

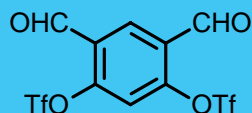


Extended Helicenes

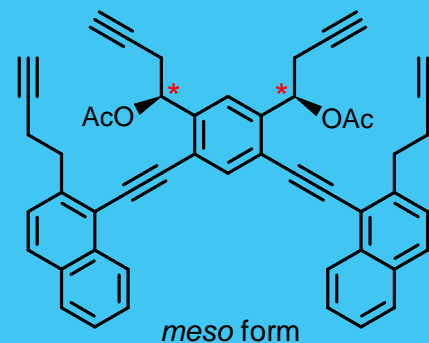
Synthesis



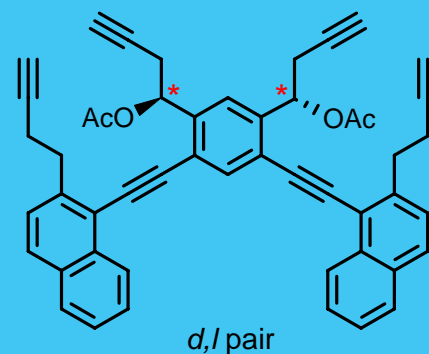
3 steps



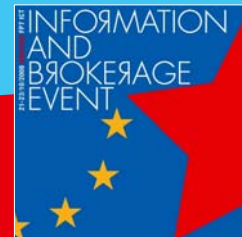
4 steps



+

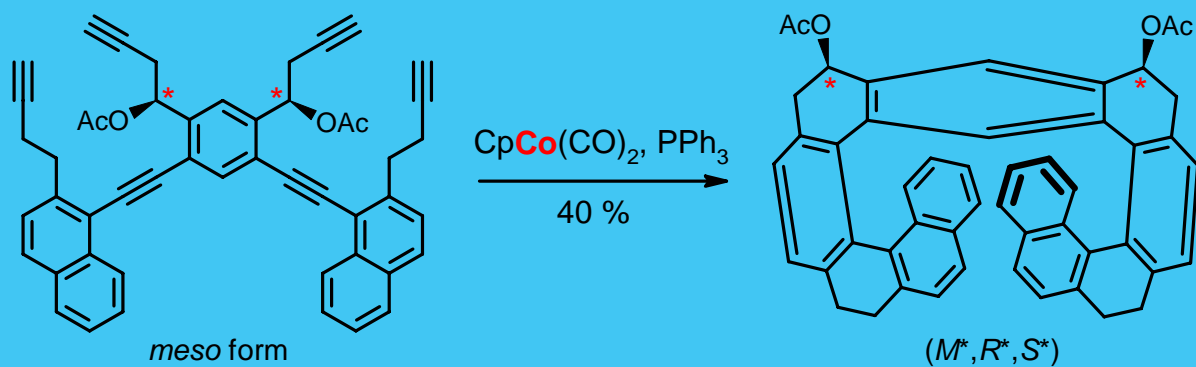


21-23/10/2008 MOSCOW • FP7 ICT



Extended Helicenes

[2+2+2] Cycloisomerisation

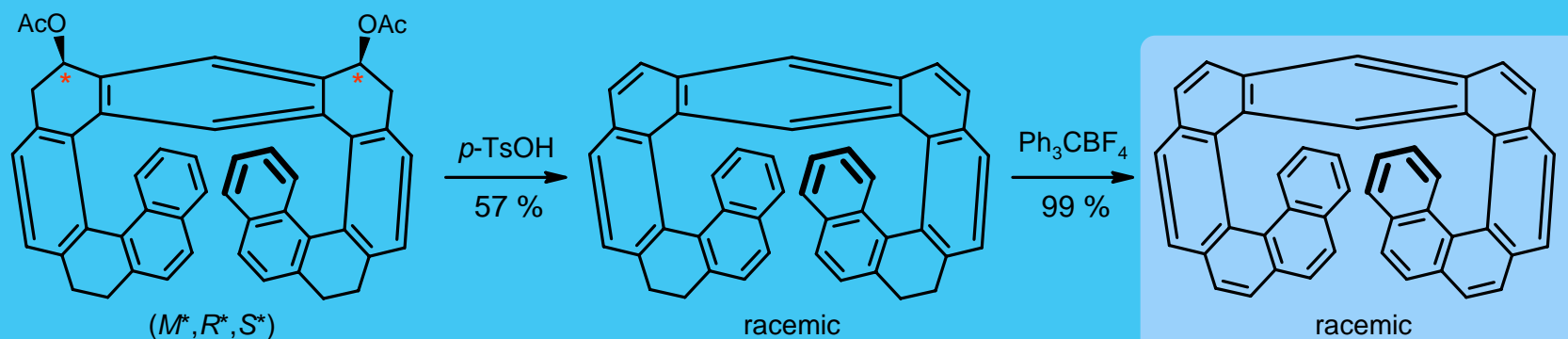


21-23/10/2008 MOSCOW • FP7 ICT

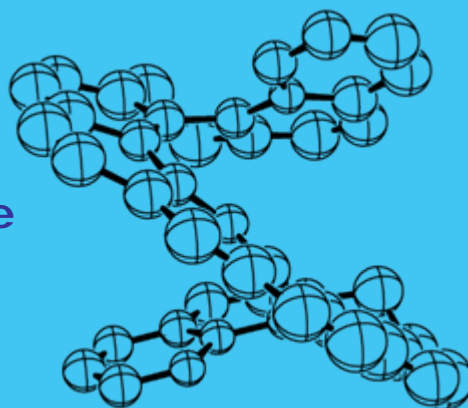


Extended Helicenes

Aromatisation



X-ray structure

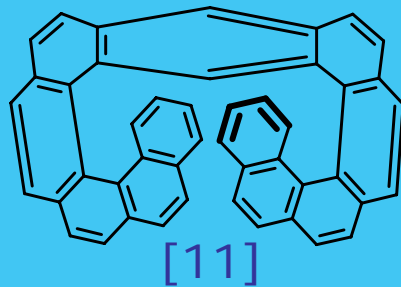


21-23/10/2008 MOSCOW • FP7 ICT

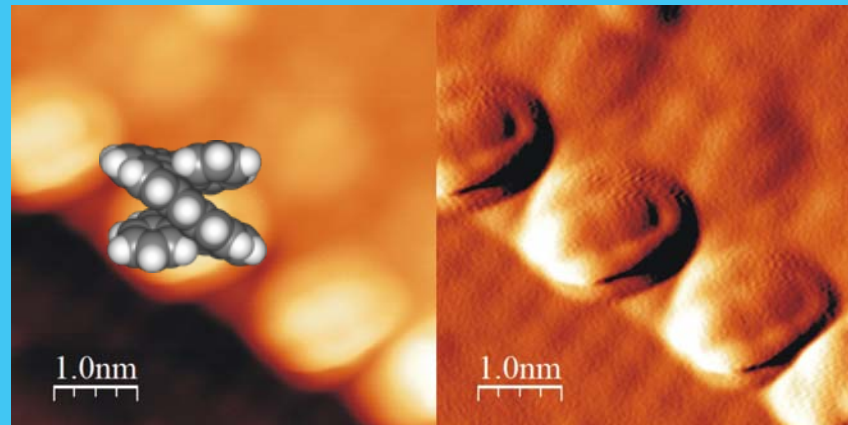


Extended Helicenes

UHV LT STM study of [11]helicene



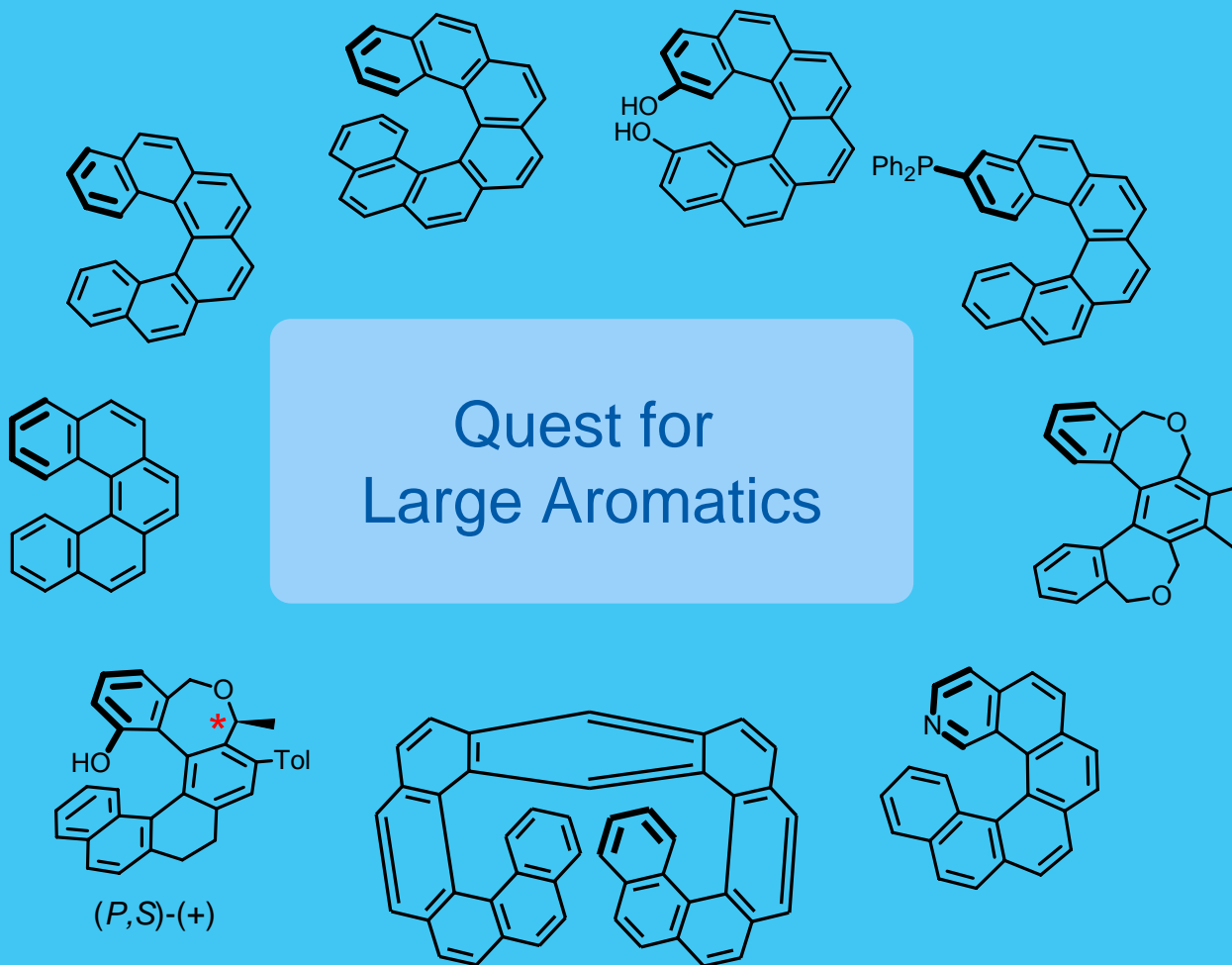
on In/Sb (001)
c(8x2) at 77 K



21-23/10/2008 MOSCOW • FP7 ICT



Summary



Quest for
Large Aromatics

21-23/10/2008 MOSCOW • FP7 ICT



Thank you for your attention

Acknowledgment

I. Starý	L. Rulíšek	Financial Support
A. Andronova	J. Rybáček	FP6 IP Pico-Inside
M. Buděšínský	D. Schroeder	GA CR, MoI, MoE
J. Chocholoušová	P. Sehnal	IOCB AS CR
J. Cvačka	O. Songis	
G. Goryl	F. Szydło	
G. Huerta-Angeles	M. Szymonski	
V. Kašička	D. Šaman	
A. Kollarovics	F. Teplý	
J. Míšek	M. Tichý	
J. Roithová		

21-23/10/2008 MOSCOW • FP7 ICT

