

One person's observation of PPC-12.5

Ashraf Alam
University of Bristol

PPC 12.5 – Closing Remarks

General Observations:

- **Chemistry as conf title? : evolved into more ‘solid state’ type chemistry (materials science) than ‘wet chemistry’ in the early conferences!**
- **This remote conf. ran more smoothly than I anticipated; 94 registered participants; ~50% attendance at a given time**
- **No Chinese (PRC) (access problems?); few regulars from US/Canada (time diff?)**
- **Rest of the slides involve summary according to themes (obviously overlaps amongst themes)**

PPC 12.5 – Closing Remarks

- **Polymers / Soft Matter and related issues – Free-Volumes and applications: (amorphous / crystalline materials, degrees of conduction....)**
 - Polymer and polymer nano-composites (variety of components/fillers)
 - **Solid Polymer electrolytes**
 - **Membranes: variety of types (including electrolytes) for a variety of applications e.g. gas/fluids transport / separation...**
 - **Effects of external parameters on synthesis (e.g. radiation) or applications (e.g. electric fields, wide range of radiation)**

PPC 12.5 – Closing Remarks

- Polymers/composites and related:continued
- Increasing use of multiple complementary techniques.
- Although some mentions were made about mol. Dyn. Simulations, I had a feeling that good connection to theoretical input (modelling, mol. dyn. Simulations...) has been limited. There was one poster on the topic of mol. Dyn. simulations.
- There appears to be more awareness that the presence of free volume, in specific cases, also provides complications regarding “un-planned” uptake of ‘fluids’ from environment! This requires mindfulness about the use o-*P*s intensity in the data interpretation??

PPC 12.5 – Closing Remarks

Other metallic / Non metallic solids – surfaces, interfaces, membranes:

- A wide variety of materials: - some specifically designed for industrial applications (e.g. high entropy alloys)
- A wide range of sample synthesis and/or post synthesis treatments (e.g. doping, irradiation, surface / bulk mechanical treatments ...) to achieve desired properties.
- Good use of complementary techniques and, in some cases, appropriate theoretical input.

PPC 12.5 – Closing Remarks

Advances in experimental/ analysis techniques

- Good spread of improvements/upgrades of large and smaller facilities.
- Useful roundtable sessions on Na22 sources and PALS analysis
- Thoughts on incorporation of ‘accessible’ electronics into vacuum environments!
- Higher density (cold) Ps – more in atomic Physics section
- Incorporation of timing into PET imaging systems - more in bio-med section

PPC 12.5 – Closing Remarks

- Porous materials (other than polymers)

- A variety of materials to include zeolites and ZIFs, MOFs and pores in biological systems (in nature)

 - Pore characterization / Ps formation within pores

 - Physics and chemistry within pores including fluids / fluid phases in pores.

 - In many cases appropriate use of complementary techniques.

PPC 12.5 – Closing Remarks

Liquids and multiphase systems, biological and medical applications

- (I think) Topics in red was the dominant topic in early days of this conference; there was a good deal at this meeting. The green topics above are now at their beginning. Complex / challenging but growing in popularity.
- recent developments are: studies of biological tissues and their detrimental modifications (e.g. malignancy) including human tissues by Ps-spectroscopy.
- Presence/role of oxidising chemicals in harmful alterations of human cells (hence the encouragement to take antioxidants?). Also the role of water?
- Future Incorporation of the above in PET environment

PPC 12.5 – Closing Remarks

- Atomic physics at low and high densities
- This session has just ended fresh in your memory – amongst others: Positron binding to molecules vs geometry, hyperfine resonance in positronium, electron affinity of Ps ...

- Higher density (cold) Ps – desirable for many experiments and associated technology (laser cooling)
 - Ps Bose-Einstein-Condensation appears to be progressing towards 'a' goal; current expectation: cooling towards T_c and high enough density of Ps in ~5 years in Japan! (American groups predicated a 5-year time scale at ICPA in Orlando) – now more realistic!

Thanks to the team of

organisers

Moderators

session chairs

Stay well, safe, happy and SANE!