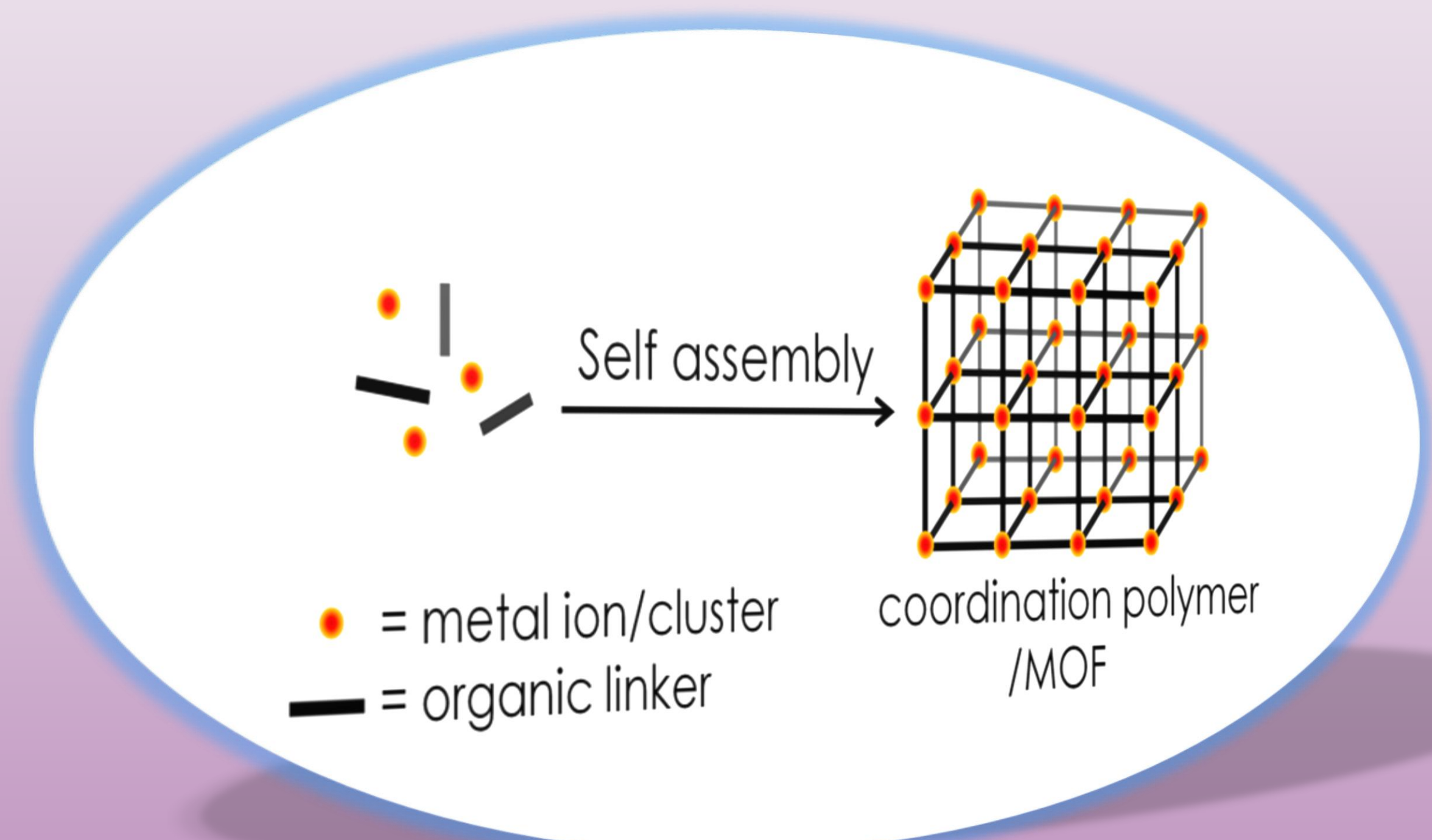
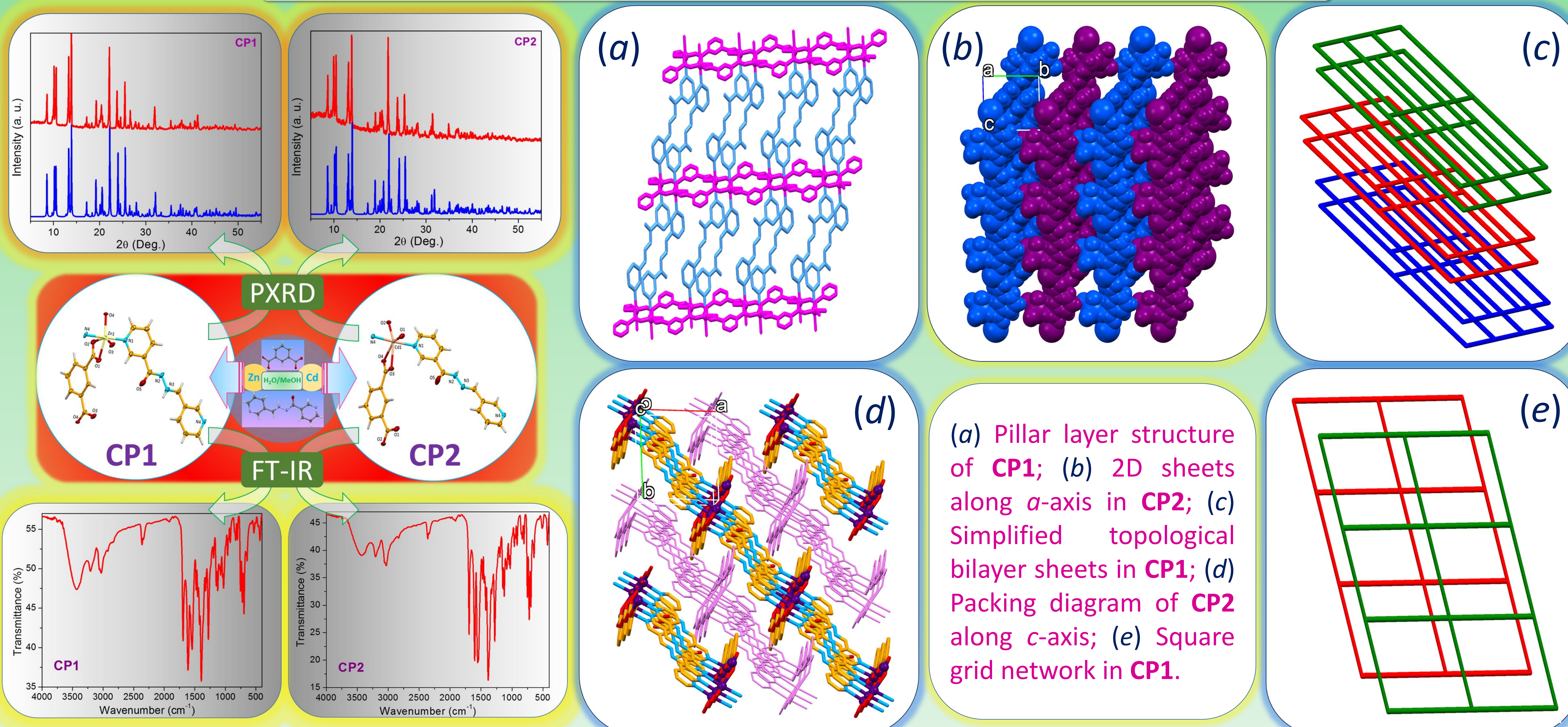


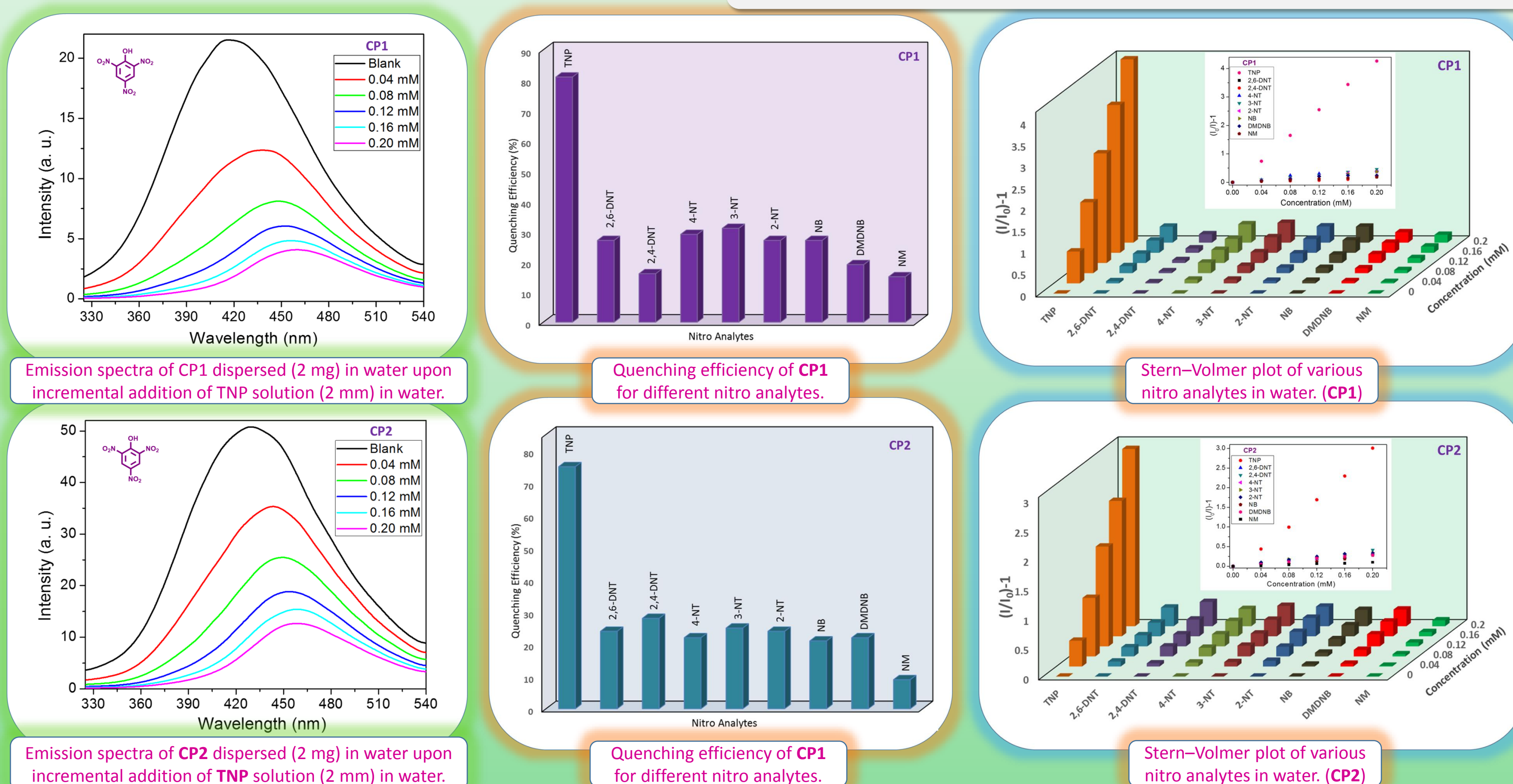
- Coordination polymers (CPs)/Metal organic frameworks (MOFs) are a new class of crystalline materials in which metals nodes are linked by organic ligands to form extended networks.
- Syntheses of new CPs/MOFs is of immense current research interest due to their potential applications in diverse fields including luminescence, sensing and electronics.
- We synthesize two 2D mixed ligand CPs, $\{[M(IPA)(L)]\}_n$ comprising of bidentate ligand IPA (Benzene-1,3-dicarboxylate) and hydrazone Schiff base ligand L (3-pyridylcarboxaldehyde isonicotinoylhydrazone) with d^{10} transition metal centres (M = Zn(II) CP1 and Cd(II) CP2).
- Structural aspects, fluorescence and application of these newly synthesized materials for detection of organic molecules with nitro-functionality by luminescent quenching are studied.



Structural Aspects of CP1 $\{[Zn(IPA)(L)]\}_n$ and CP2 $\{[Cd(IPA)(L)]\}_n$



Aqueous Phase Detection of Nitroanalytes



Experiment: As synthesized CPs were added to a fluorescence cuvette containing 2 mL water. Emission ($\lambda_{ex} = 295$ nm) was measured in 325-540 nm range *in-situ* after incremental addition of freshly prepared aqueous nitroanalyte solutions (2 mM). The solution was continuously stirred throughout the experiment. Triplicate experiments yield consistent results.

2,4,6-trinitrophenol (TNP) exhibit best quenching ability among the all studied analytes with **81%** (CP1) and **75%** (CP2) quenching of fluorescence intensity. The quenching constant (K_D) for TNP was found to be $2.165 \times 10^4 M^{-1}$ (CP1) and $1.523 \times 10^4 M^{-1}$ (CP2), as verified by linear fitting of the SV plot at a concentration range (0 - 0.20 mM).

Quenching phenomenon is explained by electrostatic interactions between analytes and CPs. Usually, analyte (electron deficient) accepts the excited electrons from the LUMO of electron rich CPs which causes the quenching of emission intensity.

Conclusion

Two ternary CPs $\{[M(IPA)(L)]\}_n$, M = Zn(II) and Cd(II) were synthesized by diffusion method and characterized by various physico-chemical techniques including single crystal X-ray studies.

Synthesized CPs exhibit excellent fluorescence quenching in presence of nitroanalytes and enrich the research insight for the design and synthesis of CPs suitable for selective detection of nitroanalytes in aqueous phase.

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