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Cover Profile

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One-Dimensional Looped Chain and Two-Dimensional Square Grid Coordination Polymers: Encapsulation of Bis(1,2,4-Triazole)-*trans*-cyclohexane into the Voids


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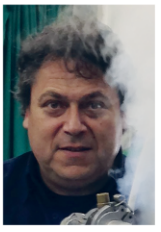
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Invited for the cover of this issue are Yann Garcia from Université catholique de Louvain, Belgium, and collaborators from partner universities and research centers. The cover image shows the square grid shape of an unprecedented Cu^{II} coordination polymer with an "ancient temple architecture".

In one word, how would you describe your research?

Surely exciting as well as challenging. In this frame, the use of X-ray crystallography was a must to detect guest molecules in our host network. We warmly thank our colleagues from the universities of Bordeaux and Durham (UK) for their input into this aspect.

What is the most significant result of this study?

The encapsulation of bis(1,2,4-triazole)-*trans*-cyclohexane into the voids of the 2D triazole network is certainly the scoop of this work. It opens new perspectives, for instance for drug storage or detection of toxic industrial chemicals. In addition, as such networks can become switchable with iron, it opens the gates to sensor design. We have recently communicated a unique sensor material for the vapor detection of alcohols and toxic gases in *J. Mater Chem. C.* **2018**, *6*, 3895–3900.

Is your current research mainly fundamental or rather applied?

Fundamentally inspired although we have discovered several materials that would certainly be useful. Recent examples include a single-walled Cu^{II} organic nanotube for Hg storage in *Chem. Eur.* **2015**, *21*, 4300–4307 or a sensor material for civil security applications in collaboration with the French aerospace lab (Onera) and Univ. Paris Saclay-Versailles, reported in *J. Phys. Chem. C* **2018**, 122, 7597–7604. Applications are often suggested, but we do not implement our materials into the applied corner, e.g. into devices. We prefer to explore new avenues and unploughed fields instead. We like to focus on properties and challenge ourselves with new synthetic goals.

What are the main challenges in the broad area of your research?

The controlled design of supramolecular inorganic–organic crystal structures remains a dream given the numerous factors involved in crystallization including metal-to-ligand ratio, solvent properties, reaction conditions, and so on. This work, featuring a unique host–guest 2D square grid coordination polymer, is particularly instructive as well as insightful. The control of spin crossover properties is also targeted for iron systems but is often unpredictable. That makes this chemistry so fun!

What was the inspiration for this cover design?

We got fascinated by ancient religious architectures of Roman style, which are widespread in Europe. For the cover, we got immediate inspiration from a temple located near N. N. Adarsh's hometown in India. This temple is known as "Guruvayoor Sree Krishna Temple", which features "square grid shape" architecture, having voids decorated by "Kerala oil lamps". The coordination polymer highlighted in this article also displays a similar architecture, having encapsulated a guest organic molecule inside the inorganic–organic host network. The trick is that the host here is a molecular brick, which is part of the network construction!