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Titolo del Seminario: **The wonder of Metal-Organic Frameworks: from molecular Tinkertoy to the Nobel Prize**

Abstract: **Metal–Organic Frameworks (MOFs) represent a groundbreaking class of crystalline, porous materials formed by linking metal ions or clusters with organic ligands, generating highly tunable architectures with enormous internal surface areas and well-defined cavities. Through rational design of metal nodes and organic linkers, MOFs offer exceptional versatility for applications in gas storage and separation, catalysis, sensing, and environmental remediation. In 2025, the Nobel Prize in Chemistry was awarded to Susumu Kitagawa, Richard Robson, and Omar Yaghi "for the development of metal–organic frameworks," marking the recognition of MOFs as molecular architectures capable of addressing some of humanity's greatest challenges. Their pioneering work has prompted the creation of tens of thousands of new frameworks, some of which can harvest water from desert air, capture carbon dioxide, remove toxic pollutants, or host catalytic transformations. As the field evolves, MOFs continue to bridge fundamental chemistry and real-world impact, embodying a new paradigm where molecular design meets global sustainability goals.**