The present interest in graphene, a naturally occurring two-dimensional polymer \(^1\) (2DP), makes clear that there is a lack of synthetic methods that would allow accessing covalently bonded monolayer sheets with internal periodicity under conditions mild enough to allow for the organic chemistry repertoire to be applied. The presentation will start with a brief overview of the many approaches performed so far towards this goal. They led to invaluable insights and paved the way for the first feasible solutions reported in 2012 by the author’s laboratory. The concept rests upon three steps: (a) careful monomer design, (b) interfacial \(^2,4,6\) and single crystalline pre-ordering \(^3,5\) of the monomers and (c) fixation of the ordered state preferably by light–induced polymerizations. The lecture will discuss the developments which took place since this first unequivocal case of a 2DP with an all carbon structure to the present point where we got closer to a technological exploitation with a remarkably simple system. \(^5\)


