

## FORMATION OF NANOSPHERES FROM SELF-ASSEMBLED OLIGOSQUARAMIDES

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Oligosquaramides are a new family of unnatural oligomers based in squaramide units and aliphatic linkages, represented by the general structure shown in figure 1a. Squaramides, considered as vinylogous amides, are versatile molecules with considerable hydrogen bonding capabilities, as well as favorable dynamic properties to adopt secondary structures. These oligomers are palindromically constituted and fold in a hair-pin like structure driven by an array of hydrogen bonds, analogously to proteins. The oligosquaramides folded structures are stable even in highly competitive media as methanol and ethanol solutions.<sup>1</sup> Some short peptides self-organize and form vesicular assemblies that can aggregate through different mechanism<sup>2</sup>. These processes can drive to highly ordered nanoarchitectures.

In this study, we present the formation and characterization of globular nanostructures from oligosquaramide n=5.

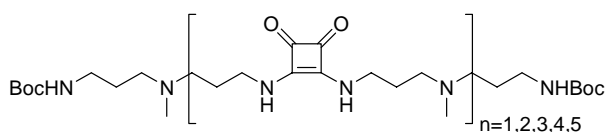
Preliminary AFM and TEM studies show the formation of nanospheres in a range of size of ~20-200 nm (figure 1b) from methanolic solutions. These structures are concentration dependent and the presence of non-specific aggregates and layers are observed upon different conditions.

These nanostructures constitute a new class of preorganized material with potential applications.

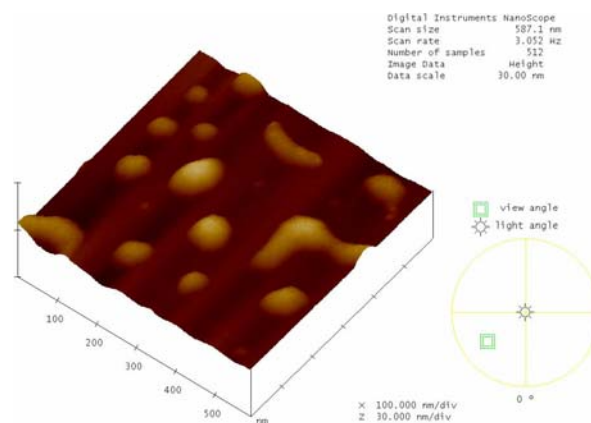
### References:

[1] Rotger, C., Piña, M. N., Vega, M., Ballester, P., Deyà, P. M., Costa, A. *Angew. Chem. Int. Ed.*, **45** (2006) 6844.

[2] a) Vauthey, S., Santoso, S., Gong, H., Watson, N. Zhang, S. *Proc. Natl. Acad. Sci. USA*, **99** (2002) 5355; b) Reches, M., Gazit, E. *Nano Lett.*, **4** (2004) 581.



**a**



**b**

**Figure 1. a) general structure of oligosquaramides. b) AFM image of globular nanostructures of oligosquaramide n=5**