Communication at the nanoscale. Nanoparticles that "talk" to one another.

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Chemical communication is based on the exchange of molecular messengers between different entities. Communication networks enable a group to share information and act together towards the achievement of a common goal. Considering this aim, coordinated communication displays an essential role as it is necessary to organize the collective behaviour in a defined order to assure efficiency and productivity. In fact, nature life is based on communication processes developed in coordinated communities at the molecular scale involving the use of chemical messengers. [1-2] Transferring communication capabilities to human-made nanoscale systems has attracted significant attention in recent years due to potential applications in areas such as biomedicine or ICT (Information and Communication Technologies). Compared to traditional telecommunication technologies, chemical communication offers interesting features such as the reduced size of molecular transceivers and receivers, minimal power consumption and the ability to operate in biological and physiological environments. Some micro- and nanovehicles capable of interacting with living systems by means of sending or receiving chemical messengers have been developed.[3] Linear communication between particles or feedback between two particles have also been reported. [4-7] However, the field is still in its infancy and more complex communication communities should be demonstrated with the future aim to integrate coordinated multicomponent communities of nanodevices with advanced capabilities. Strategies of cooperation and coordination between different nanoparticles enable sophisticated functionalities that go beyond those carried out by individual agents. However, regardless of the aforementioned advancements made in the last years, the definition of technologies to support practical and useful applications of communication at nanoscale, while essential to motivate further growth of this field in the research community, is still very limited and still scarcely explored.

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