Chemical characterization of Bacteria - Graphene oxide/Ag nanocomposite interactions by Atomic force microscopy -Infrared spectroscopy

Reference	Presenter	Authors (Institution)	Abstract
01-131	Raynara Maria Silva Jacovone	Jacovone, R.M. (Instituto de Pesquisas Energéticas e Nucleares); Costa, C.A. (Brazilian Center for Research in Energy and Materials); Sakata, S.K. (Instituto de Pesquisas Energeticas e Nucleares (IPEN) -);	Atomic force microscopy -Infrared spectroscopy (AFM-IR) is a combined technique that allows nanoscale chemical characterization of biological–materials interactions. In this work, AFM-IR was used to map Escherichia coli in graphene oxide /silver nanocomposite (Ag/rGO). In Escherichia coli, it was observed absorption bands corresponding to amine I at 1660 cm-1 and amide II at 1550 cm-1 from proteins. On the other hand, when these bacteria were exposed to (Ag/rGO) typical absorption bands from carbonyl/carboxyl groups around 1745 and carbon bond around 1620 were also detected, showing the antibacterial activities of (Ag/rGO). The conventional atomic force microscope was used to elucidate the morphologic changes that occurred by internalization of nanocomposite into the bacteria. Atomic force microscopy -Infrared spectroscopy (AFM-IR) is a combined technique that allows nanoscale chemical characterization of biological–materials interactions. In this work, AFM-IR was used to map Escherichia coli in graphene oxide /silver nanocomposite (Ag/rGO). In Escherichia coli, it was observed absorption bands corresponding to amine I at 1660 cm-1 and amide II at 1550 cm-1 from proteins. On the other hand, when these bacteria were exposed to (Ag/rGO) typical absorption bands from carbonyl/carboxyl groups around 1745 cm-1 and carbon bond around 1620 cm-1 were also detected, showing the antibacterial activities of (Ag/rGO). The conventional atomic force microscope was used to elucidate the morphologic changes that occurred by internalization of nanocomposite into the bacteria.

<< Back