

## Silver nanoparticle release from commercially available plastic food containers into food simulants - DTU Orbit (08/11/2017)

### Silver nanoparticle release from commercially available plastic food containers into food simulants

Silver nanoparticles (AgNPs) are currently being used in many different kinds of consumer products in order to take advantage of their antimicrobial properties. However, the potential migration of silver nanoparticles into food and subsequent consumer exposure has hardly been addressed. In the current study, we investigated four brands of commercially available plastic food storage containers and measured the total amount of silver, particle size and number concentration, and the migration rates into three different food simulants (Milli-Q grade water, 10 % ethanol, and 3 % acetic acid) for 10 days at 40 °C. The experimental setup was made according to the European Commission Directive (EU 10/2011) for articles intended to be in contact with food. The total amount of silver in plastic containers and migration solutions was quantified by ICP-MS analysis, and the size of the migrated particles was investigated by single particle ICP-MS and TEM-EDS. The total mass and median size of released particulate Ag were generally highest in 3 % acetic acid for three out of four food container brands. The total content of silver in the containers varied from 13 to 42 µg/g. The highest migration was observed in the 3 % acetic acid food simulant for all four brands of containers, with total silver release up to 3.1 ng/cm<sup>2</sup> after 10 days. In conclusion, the experimental results show that silver has the potential of migrating into food, especially when in contact with more acidic substances.

### General information

State: Published

Organisations: Department of Environmental Engineering, Environmental Chemistry

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Number of pages: 11

Publication date: 2016

Main Research Area: Technical/natural sciences

### Publication information

Journal: Journal of Nanoparticle Research

Volume: 18

Issue number: 1

Article number: 5

ISSN (Print): 1388-0764

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 1.74 SJR 0.485 SNIP 0.555

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.569 SNIP 0.689 CiteScore 1.97

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 0.663 SNIP 0.868 CiteScore 2.17

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 0.749 SNIP 1.013 CiteScore 2.54

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 0.855 SNIP 1.03 CiteScore 2.56

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 1.09 SNIP 1.44 CiteScore 3.52

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 0.966 SNIP 1.248

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 0.977 SNIP 1.053

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 1

Scopus rating (2008): SJR 0.989 SNIP 1.138

Scopus rating (2007): SJR 0.873 SNIP 1.082

Scopus rating (2006): SJR 0.862 SNIP 1.242

Scopus rating (2005): SJR 0.805 SNIP 1.174

Scopus rating (2004): SJR 0.805 SNIP 1.332

Scopus rating (2003): SJR 0.564 SNIP 0.87

Scopus rating (2002): SJR 0.676 SNIP 1.226

Scopus rating (2001): SJR 0.503 SNIP 0.653

Scopus rating (2000): SJR 0.296 SNIP 0.409

Web of Science (2000): Indexed yes

Original language: English

Material Science, Nanotechnology, Inorganic Chemistry, Characterization and Evaluation of Materials, Physical Chemistry , Optics, Optoelectronics, Plasmonics and Optical Devices, SC5, Silver nanoparticles, Consumer products, Nanoparticle release, Consumer exposure, Environmental and health effects, Food safety

Electronic versions:

Mackevica\_et\_al\_2016\_Ag\_release\_from\_plastic\_food\_containers.pdf

DOIs:

10.1007/s11051-015-3313-x

Source: FindIt

Source-ID: 277026384

Publication: Research - peer-review › Journal article – Annual report year: 2016