Supplementary Information (SI)

Toxicity Assessment of Nano-sized MAX Phases: Considerations

for Safe-by-Design Approaches

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Characterization of GO

Commercially available few-layered GO (4–8 layers) was purchased from Cheap Tubes Inc. (Brattleboro, VT, USA) in powder form. In a previous study, the physicochemical information of GO was supplied by the manufacturer and characterized by AFM and Raman spectroscopy (Chatterjee et al., 2016). The surface topography, height profile, and lateral size distribution of GO were examined using AFM in non-contact mode. Raman spectroscopy was performed at room temperature using a Micro Raman system (UniRAM3500, UniNanoTech Co., Ltd., Korea) with a 532 nm laser. Calibration was initially performed using an internal silicon reference at 500 cm⁻¹ and gave a peak position resolution of less than 1 cm⁻¹. The spectra were measured from 0 to 5000 cm⁻¹.

Properties	GO	Reference
Thickness (nm)	122	(Chatterjee et al., 2016)
Lateral size distribution (µm)	10	(Chatterjee et al., 2016)
X&Y dimensions (nm)	300~800	Supplied by manufacturer
Layer numbers	4-8	(Chatterjee et al., 2016)
Functionalization	Surface oxygen	(Chatterjee et al., 2016)
Purity	>99wt%	Supplied by manufacturer
Graphene peaks with Raman spectroscopy	20000 20000 19000 18000 16000 16000 16000 16000 16000 16000 16000 16000 16000 16000 100	(Chatterjee et al., 2016)

Table S1. Characterization of few layered graphene oxides (GO).

Reference

Chatterjee, N., Yang, J.S., Choi, J., 2016. Differential genotoxic and epigenotoxic effects of graphene family nanomaterials (GFNs) in human bronchial epithelial cells. Mutat. Res. -Genet. Toxicol. Environ. Mutagen. 798–799, 1–10. https://doi.org/10.1016/j.mrgentox.2016.01.006