

# Adhesion and Proliferation of CHO Cells on SLG

Amira El Merhie<sup>1</sup>

Neeraj Mishra<sup>2</sup>, Camilla Coletti<sup>2</sup>, Silvia Dante<sup>1</sup>

<sup>1</sup>Department of Nanophysics, Istituto Italiano di Tecnologia, Genoa, Italy

<sup>2</sup>Center for Nanotechnology Innovation @NEST, Istituto Italiano di Tecnologia, Pisa, Italy

[amira.elmerhie@iit.it](mailto:amira.elmerhie@iit.it)

Single layer graphene (SLG) grown by chemical vapour deposition (CVD) has been witnessing increasing interest in the field of biomedicine, mainly of biosensor development because it can be easily transferred onto any other substrates; and it can be patterned (1) for the creation of large area biosensors or devices (2). One of the most important aspects to be studied in this regard is cell-material interaction.

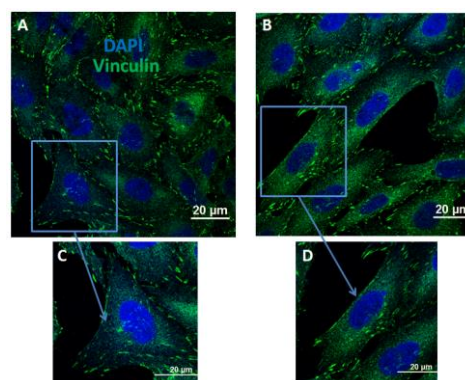
Recently, we have developed a straightforward and effective fabrication technique of SLG substrates patterned by laser micromachining, using which we have successfully demonstrated ordered neural network growth (3). Further, with the aim of investigating the generalization of the cell response to the same substrates, we tested Chinese Hamster Ovary (CHO) cells, an epithelial cell line, on PDL-coated micropatterned SLG focusing on their adhesion behavior. Much higher adhesion on PDL-SLG regions with respect to laser ablated areas was observed at early instant after seeding, confirming previously observed neuronal behaviour; however, at later time in culture (24 h), cell migration was observed towards the ablated SLG regions (4). In the present investigation we show confocal images of focal adhesions (FAs), stained for vinculin to illustrate that different adhesion properties translate into different number and shape of focal adhesion complexes (Fig. 1). We observed a stellate morphology of cells in contact

with SLG with FAs concentrated to the protruding ends of the cells (Fig. 1A, C). While cells in contact with the ablated region appear more elongated with FAs situated at the extremities (Fig. 1B, D). Additionally, the proliferation curves on different substrates (SLG vs Glass) have been acquired. The results show how proliferation on SLG is favoured (Fig. 2).

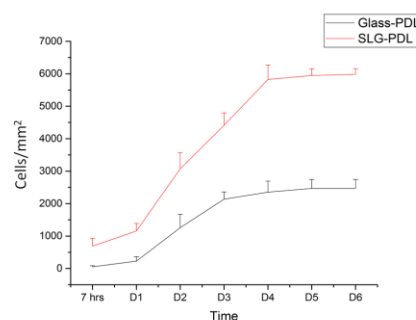
## References

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## Figures



**Figure 1:** Morphological Images of CHO cells on PDL coated patterned SLG substrates: morphology of cells (A) & (B) (24 h of culture) on SLG and the ablated part respectively. (C) & (D) magnified images of (A) & (B).



**Figure 2:** Growth curves of CHO cell on PDL coated SLG and PDL coated glass coverslips.