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Electron-beam irradiation of supported DPPC monolayer films – an XPS study[1] RADMILA PANAJOTOVIC, The Open University, UK, MARK SCHNIETZ, ANDREY TURCHANIN, University of Bielefeld, Germany, NIGEL MASON, The Open University, UK, ARMIN GOELZHAUSER, University of Bielefeld, Germany, ECCL-COST COLLABORATION — Chemical changes in phospholipid (DPPC – 1,2-dipalmitoyl-sn-glycero-3-phosphocholine) monolayer films deposited on gold are studied in an X-ray photoelectron spectroscopy experiment. DPPC films have been irradiated by a monoenergetic electron beam in the energy range from 5 to 200 eV. The shifts in the binding energy of C 1s, O 1s, P 2p, and N 1s electrons, as well as the change in the intensity of corresponding photoelectron peaks, were observed before and after electron beam irradiation. We show that the electrons with energy between 20 and 100 eV have the largest effect on DPPC, mostly stripping off the protons from the tails and breaking the COO- bond in the head of the molecule, but also releasing methyl group from the choline group (N-$(CH_3)_3$). The least effect of electron irradiation is shown on the P 2p band, regardless of the incident energy, which may be linked to the orientation of the DPPC molecules and additional intramolecular bonding.

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