(d)

(c)

(b)

(e)

(g)

(f)

Figure 2: Comparison of moth and butterfly wing-scale microstructure with the 3 main types of porous sound absorbers: (a) cellular (after [37]), (b) fibrous and (c) granular sound absorbers (after [33]). The moth species are: (d) Spilosoma niveus and (e) Rhyparioides amurensis, both scale bars are 1 μm. The butterfly species are: (f) Pieris canidia, scale bar 1μm and (g) Colias erate, scale bar 100nm. Ridges (R), lamellae (l), microribs (mr) and crossribs (r) are present in both moths and butterflies. The pigment granules (p) are present only in the butterfly scales. However, trabeculae (T) that connect the layers of lamellae to create a multilayer structure are moth scale characteristic (after [31]).

(a)

