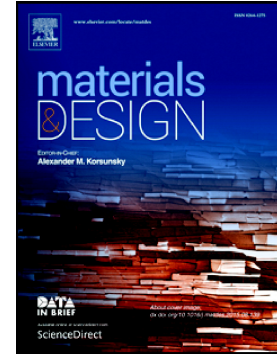


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**Evolution of strength and fibres orientation of a short-fibres reinforced
Ti-matrix composite after extrusion**

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Abstract: According to shear-lag model, fibers orientation in composites reinforced with short fibers has a significant effect on their strength which can be predict in term of strengthening factor (C_0) of fibers. In this work, titanium matrix composite reinforced with TiB fibers was fabricated with enhanced mechanical performances using *in situ* technologies plus extrusion process. The value of TiB fibers C_0 in the as-cast composite was calculated to be very low (0.125). Increase of the strengthening factor of TiB fibers by extrusion was modeled based on a deformation model. The value of C_0 is calculated to be 0.442, 0.713 and 0.812 with extrusion ratio 1.5, 2.0 2.5, respectively. Tensile tests showed that extrusion process increased strength of the composite significantly. But C_0 was overestimated by this model with high extrusion ratios. The overestimating may be attributed to the broke of TiB fibers during extrusion.

Keywords: Metal matrix composites; Extrusion; Fibers orientation evolution; Strengthening mechanism; Strengthening effect model

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