

Fig. 5 Deformation modes of (a) empty- (b) foam-filled ( $\rho = 0.35 \text{ g/cm}^3$ ) circular tubes. Reproduced from Hanssen, A.G., Langseth, M., Hopstad, O.S., 2000. Static and dynamic crushing of circular aluminium extrusions with aluminium foam filler. *Int. J. Impact Eng.* 24 (5), 475-507.



Fig. 6 Diamond and concertina deformation modes of (a) empty- (b) foam-filled long tubes. Reproduced from Asakavithchai, S., Slater, D., Kennedy, A.R., 2004. Effect of tube length on the buckling mode and energy absorption of Al foam-filled tubes. *J. Mater. Sci.* 39 (24), 7395-7396.

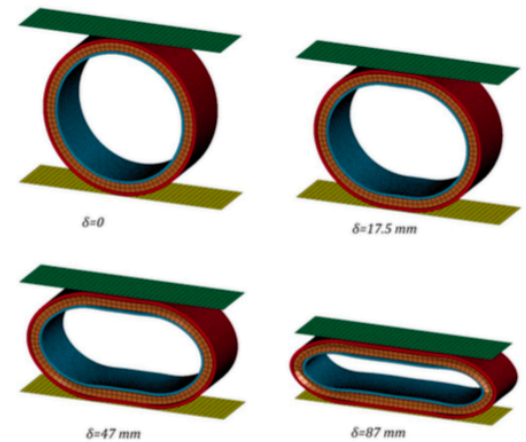


Fig. 10. Collapse sequence of the STFIU under quasi-static loading.



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**The middle images above are from:** A. Baroutaji, A. Arjunan, A. Niknejad, T. Tran, A.-G. Olabi, Application of Cellular Material in Crashworthiness Applications: An Overview, *Ref Modul Mater Sci Mater Eng* (2019)

**The right-most images above are from:** A. Baroutaji, A.G. Olabi, Lateral collapse of short-length sandwich tubes compressed by different indenters and exposed to external constraints, *Materwiss Werksttech*, 45 (2014)

See:

[https://www.researchgate.net/profile/Ahmad\\_Baroutaji](https://www.researchgate.net/profile/Ahmad_Baroutaji)

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### Selected Publications:

A. Baroutaji, A.G. Olabi, Lateral collapse of short-length sandwich tubes compressed by different indenters and exposed to external constraints, *Materwiss Werksttech*, 45 (2014)

Baroutaji A., Morris E., Olabi A.G.: Quasi-static response and multi-objective crashworthiness optimization of oblong tube under lateral loading. *Thin Walled Struct.* 82, 262-277 (2014)

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Arun Arjunan, Manpreet Singh, Ahmad Baroutaji and Chang Wang, "Additively manufactured AlSi10Mg inherently stable thin and thick-walled lattice with negative Poisson's ratio", *Composite Structures*, Vol. 247 Article 112469, 1 September 2020

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