Reviews on Advanced Materials and Technologies, 2022, vol. 4, no. 3, pp. 28–34
DOI: 10.17586/2687-0568-2022-4-3-28-34

Misfit Stress in Radial Core-Shell Nanowires with Diffuse Interface Boundaries

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Abstract. The elastic models of radial core-shell nanowires with diffuse interphase boundaries are suggested. The concept of eigenstrain is employed to consider a misfit stress distribution induced by diffusive interfaces with different range of distinctness. The eigenstrain profile described by the misfit parameter is approximated by piecewise-linear, error and arctangent functions. For these approximations the elastic stresses in core-shell nanowires are analytically derived, illustrated with plots and discussed in detail.

Acknowledgements. A. S. Khramov and A. M. Smirnov received support from Russian Science Foundation Project No. 19-19-00617.

Citation: Rev. Adv. Mater. Technol., 2022, vol. 4, no. 3, pp. 28–34

View online: https://doi.org/10.17586/2687-0568-2022-4-3-28-34

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