Biomimetic random lasers.

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The growing demand for innovative photonic applications is motivating research towards the realization of soft, biocompatible and implantable photonic components that offer smart and low-cost interfaces. We report peculiar lasing emission from bio-mimetic materials. The transformations of the complete structure of paper fibers into inorganic materials on all levels of hierarchy allow to obtain very efficient Random Lasers with sub-nanometer localized lasing modes with distribution and intensity depending strongly on the local structure of the material, in this way the RL emission can be used as a fingerprint of porous materials with high potentiality in medical diagnostics and cultural heritage.