



Fig. 8. (A) Schematic representation of micelle-to-fiber transition induced by MMP-9 cleavage showing disassembly of micelles and the re-assembly into fibers after the removal of the hydrophilic group enabling prolonged drug release. (B) Chemical structure of the biocatalytic gelation system and its components. (C) AFM showing the micellar aggregates (solution) for 1a and fibers (hydrogels at 20 mM) for 1b. (D) Fluorescence intensities of doxorubicin monitored over time for doxorubicin only, doxorubicin loaded into precursor peptide (1a) micelles and MMP-9 treated precursor peptide (1a) micelles loaded with doxorubicin. Adapted with permission from Kalafatovic et al. 2015.

Conclusions

BSA and their ensuing 2D nanoscale networks or hydrogels have been exploited in recent years to develop different strategies for advanced diagnosis, enhanced imaging and selective therapies for cancer treatment. Undoubtedly, we are witnessing a critical period in this field that brought already tremendous advances in understanding and controlling the BSA process as demonstrated by the numerous *in vitro* studies. Now, the field is shifting to an applied perspective as demonstrated by the most recent *in vivo*