

$$\begin{aligned} \boldsymbol{S} = & 2\left(\frac{\partial\psi}{\partial I_1} + \frac{\partial\psi}{\partial I_2}I_1\right)\mathbf{1} - 2\frac{\partial\psi}{\partial I_2}\boldsymbol{C} - p\boldsymbol{C}^{-1} \\ & + 2\frac{\partial\psi}{\partial I_{4f}}\boldsymbol{f}_0\otimes\boldsymbol{f}_0 + 2\frac{\partial\psi}{\partial I_{4s}}\boldsymbol{s}_0\otimes\boldsymbol{s}_0 + \frac{\partial\psi}{\partial I_{8fs}}(\boldsymbol{f}_0\otimes\boldsymbol{s}_0 + \boldsymbol{s}_0\otimes\boldsymbol{f}_0) \end{aligned}$$