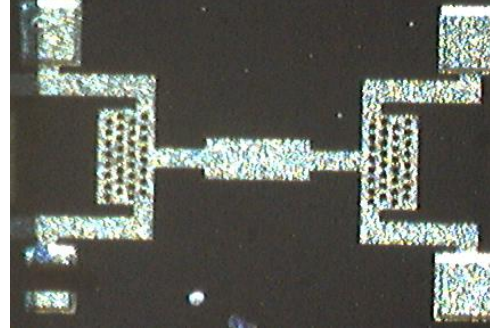
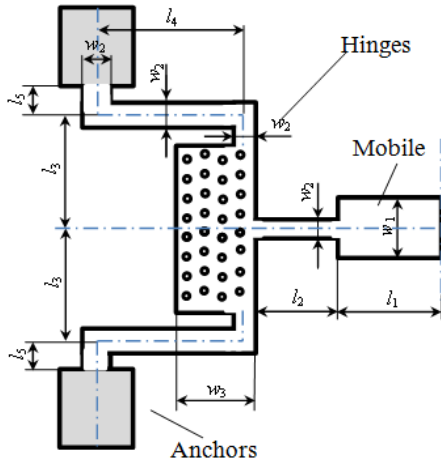


Micromembrană susținută de articulații pliate



Rigiditatea membranei:

$$k = \frac{2}{S_b + S_t}$$

$$S_b = \frac{1}{E} \left(\frac{l_5^3 + 6A_6 l_5^2 + 12A_6^2 l_5}{6I_5} + \frac{l_4^3 + 3(A_1 - l_1 - l_2 - l_4)l_4^2 + 3(A_1 - l_1 - l_2 - l_4)l_4}{6I_4} + \frac{l_3^3 + 3(2A_6 + l_5)l_3^2 + 3(2A_6 + l_5)^2 l_3}{6I_3} + \frac{l_2^3 - 3(A_1 - l_1)l_2^2 + 3(A_1 - l_1)^2 l_2}{3I_2} + \frac{l_1^3 - 3A_1 l_1^2 + 3(A_1)^2 l_1}{3I_1} \right)$$

$$S_t = \frac{1}{G} \left(\frac{(l_1 + l_2 + l_4 - A_1)^2 l_5}{2I_{p5}} + \frac{(2A_6 + l_5)^2 l_4}{2I_{p4}} + \frac{(l_1 + l_2 - A_1)^2 l_3}{2I_{p3}} \right)$$

$$A_1 = \frac{\left(\frac{1}{E} \left(\frac{l_1^2}{I_1} + \frac{l_2^2 + 2l_1 l_2}{I_2} + \frac{l_4^2 + 2(l_1 + l_2)l_4}{2I_4} \right) + \frac{1}{G} \left(\frac{(l_1 + l_2)l_3}{I_{p3}} + \frac{(l_1 + l_2 + l_4)l_5}{I_{p5}} \right) \right)}{\frac{1}{E} \left(\frac{2l_1}{I_1} + \frac{2l_2}{I_2} + \frac{l_4}{I_4} \right) + \frac{1}{G} \left(\frac{l_3}{I_{p3}} + \frac{l_5}{I_{p5}} \right)}$$

$$A_6 = - \frac{\frac{1}{E} \left(\frac{l_5^2}{I_5} + \frac{l_3^2 + 2l_3 l_5}{I_3} \right) + \frac{2l_4 l_5}{GI_{p4}}}{4 \left(\frac{l_5}{EI_5} + \frac{l_3}{EI_3} + \frac{l_4}{GI_{p4}} \right)}$$

$$I_1 = \frac{w_1 t^3}{12}; I_2 = I_4 = I_5 = \frac{w_2 t^3}{12}; I_3 = \frac{w_3 t^3}{12}; I_{p1} = \frac{(t/w_1 - 0.63)w_1^4}{3}; I_{p2} = I_{p4} = I_{p5} = \frac{(t/w_2 - 0.63)w_2^4}{3};$$

$$I_{p3} = \frac{(t/w_3 - 0.63)w_3^4}{3}$$