鑄造鈦鈮錫合金性質研究

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摘 要

本實驗中，探討一系列TNS合金之微結構、機械性質與形狀記憶效應，並以TN合金作為對照組，期望能開發出具有良好的機械性質與形狀記憶效應之鈦合金。一系列TNS合金以牙科用鑄造機熔煉與鑄造，之後使用電子顯微鏡觀察其微結構與X光繞射儀分析其相組成，使用萬能試驗儀量測其機械性質，最後進行熱處理以研究其形狀記憶效應。　　實驗結果顯示，TN及TNS-A ~ TNS-C合金的組成相為α"相，TNS-D ~ TNS-J合金的組成相為β相。彎曲強度方面，TNS-A合金提高7%，而TNS-E合金降低50%；硬度方面，TNS-J合金提高14%，而TNS-E合金降低12%；彈性模數方面，TNS-J合金提高32%，而TNS-E合金降低42%；在彈性回復角方面，添加Sn元素後，一系列TNS合金皆降低，其中以TNS-C合金有最大降幅74%；在形狀記憶效應方面，TNS-G合金提高90%，其中TNS-B、TNS-C、TNS-I及TNS-J合金不具有形狀記憶效應。

關鍵詞 : 鈦合金、微結構、機械性質、形狀記憶效應、α"相、β相

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